Fresno County Department of Public Works and Planning

MAILING ADDRESS:
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, 6th Floor
Fresno, CA 93721

LOCATION:
Southwest corner of Tulare & "M" Streets, Suite A
Street Level
Fresno Phone: (559) 262-4055
Toll Free Phone: 1-800-742-1011

APPLICATION FOR:

- ☐ Amendment Application
- ☐ Amendment to Text
- ☐ Conditional Use Permit
- ☐ Director Review and Approval
- ☐ Site Plan Review/Occupancy Permit
- ☐ Variance/Minor Variance
- ☐ No Shoot/Dog Leash Law Boundary
- ☒ Other General Plan Conformity Application
- ☐ ALCC/RLCC
- ☐ Pre-Application (Check Type)
  - ☐ General Plan Amendment
  - ☐ Specific Plan Amendment
  - ☐ Specific Plan
- ☐ Determination of Merger
- ☐ Agreements

DESCRIPTION OF PROPOSED USE OR REQUEST: Panoche Energy Center, LLC Power Plant. Whether Proposed use is consistent with Existing land use Designations.

PLEASE TYPE OR PRINT IN BLACK INK. Answer all questions completely. Attach required site plans, forms, statements and deeds as specified on the Pre-Application Review.

LOCATION OF PROPERTY: South side of Panoche Rd
between S. Granada Ave and S. Fairfax Ave
Street address 45499 W. Panoche Rd. Firebaugh (not actual site)
APN 027-060-78S Parcel size 128 Ac Sec-Twp / Rg. 5 - 15S / 13E

LEGAL DESCRIPTION: (Attach Copy of Deed)

I, [signature] (signature), declare that I am the owner, or authorized representative of the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge. The foregoing declaration is made under penalty of perjury.

	Name	Address	City	Zip	Phone
Owner (Print or Type)	PAO Investments, LLC	45499 W. Panoche	Firebaugh CA	93622	
Applicant (Print or Type)					
Representative (Print or Type)	Marcus D. Magness	7108 N. Fresno St. Ste 410	Fresno CA	93720	448-98[illegible]

OFFICE USE ONLY

		Fee:	PLU
Application Type / No.:	General Plan	$817	100
Application Type / No.:	Conformity		
Application Type / No.:			
Application Type / No.:			
Initial Study No.:			
Environmental Review:			
Health Department Review:			

Received by: [signature]
This permit is sought under Ordinance Section:
Related applications:
Drafting verification: Zone District:
APN# - -
APN# - -
APN# - -
Sec. Twp. Rg. - /
Parcel Size

WHEN VALIDATED
THIS APPLICATION IS YOUR RECEIPT

** ORDER# 0038 **
KP # 1
001 GPCF 817.00
CINDY 07/18/2007 16:26 21 106049
01 07/18/2007 16:26 106049 TNO
CHECK $817.00
CINDY

GREEN – DEPARTMENT COPY WHITE – APPLICANT COPY CANARY

Gilmore Wood Vinnard & Magness

A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

JAMES O. DEMSEY
ROBERT J. TYLER
DAVID M. GILMORE
RUSSELL O. WOOD
GERALD D. VINNARD
MARCUS D. MAGNESS
WILLIAM H. LEIFER
JODY L. WINTER

July 18, 2007

BY HAND DELIVERY

Ms. Margie McHenry
Mr. Jared Nimer
County of Fresno, Department of Public Works and Planning
Development Services Division
2220 Tulare Street
Fresno, CA 93721

Re: General Plan Conformity Applications – Starwood Power-Midway, LLC and Panoche Energy Center, LLC

Dear Ms. McHenry and Mr. Nimer,

As you know, our firm represents the owner of the real property on which the two proposed power plants will be situated in western Fresno County. On behalf of the landowner and as an accommodation to the proposed tenants (Starwood Power-Midway, LLC ("Starwood"), and Panoche Energy Center, LLC ("Panoche")), please find enclosed respective *General Plan Conformity Applications*. These applications are being submitted under a single cover as a result of both projects being situated on the same parcel (APN 027-060-78s) and both undergoing similar, but independent, approval processes with the California Energy Commission (CEC). Each application is accompanied by attachments and a filing fee in the amount of $817.00.[1]

As we have discussed, the CEC stated in its Panoche *Preliminary Staff Assessment* (also enclosed):

> "Staff cannot conclude that the Panoche Energy Center (PEC) is consistent with the Fresno County General Plan Agriculture and Land Use Element

[1] Note: Due to a delay in the mails, the attachments for the Panoche application will be submitted tomorrow.

STREET ADDRESS
7108 N. FRESNO ST.
SUITE 410
FRESNO, CALIFORNIA 93720

MAILING ADDRESS
POST OFFICE BOX 28907
FRESNO, CALIFORNIA 93729-8907

EMAIL ADDRESS
MMAGNESS@GWVM.COM

TELEPHONE (559) 448-9800
FACSIMILE (559) 448-9899

> because power plants are not expressly listed as a permitted or conditional use under that designation and Fresno County has not provided sufficient information that would demonstrate how the PEC is substantially similar in character and intensity to such uses listed in Table LU-3. Staff also cannot conclude the PEC is consistent with the AE-20 zoning designation because power plants are not expressly listed as a permitted or conditional use in that zone and Fresno County has not provided complete information in its Site Plan Review (SPR) analysis to determine whether the project would be consistent with the intent and purpose of the AE-20 zone."

By filing these applications, Starwood and Panoche request that the County provide the additional information sought by the CEC.

I appreciate your attention to these applications. Please do not hesitate to call.

Very truly yours,

Marcus D. Magness

Enclosures

cc: Richard Weiss, Starwood Power-Midway, LLC
David Jenkins, Panoche Energy Center, LLC

January 24, 2007

The County of Fresno
Site Plan Review

Starwood Power-Midway LLC
West Panoche Road
Firebaugh, CA 93662

Richard H. Weiss
Starwood Power-Midway LLC
2737 Arbuckle St
Houston, TX 77005
713-662-3688
713-828-1801 cell

SITE PLAN REVIEW SUBMITTAL REQUIREMENTS

DATE: 1/24/07 PROJECT ADDRESS: West Panoche Road

OWNER: Starwood Power - Midway LLC

ADDRESS: 591 West Putnam Ave, Greenwich CT 06830

APPLICANT/REPRESENTATIVE: Richard H. Weiss

ADDRESS: 2737 Arbuckle St. Houston TX 77005

A. GENERAL REQUIREMENTS

1. A total of eleven (11) copies of the plan must be submitted with the application.

1A. A total of four (4) copies of building elevations and four (4) copies of building floor plans.

2. The plan must be drawn on a sheet having a minimum dimension of 18" x 24".

3. The plan must show the entire parcel described in the application. If only a portion of an existing parcel is to be developed, or if the development includes two (2) or more sheets, a key map shall be included showing the entire parcel.

4. The plan must be drawn to scale, and the scale must be clearly shown. (Scale shall be large enough to adequately show the required information).

5. The plan shall be oriented to the north and show an accurate north arrow.

6. Each plan shall be folded individually with bottom right hand corner facing up. Maximum size accepted shall be 9"x12"

NOTE: A grading and drainage plan showing how the runoff from the property shall be retained on said property MAY BE REQUIRED. The grading and drainage plan must be prepared by a Registered Civil Engineer.

Development within the Fresno Metropolitan Flood Control District may require a fee to be paid prior to the issuance of building permits.

L E G E N D

X - Correction Needed
- Satisfied
0 - Not Applicable

B. SPECIFIC INFORMATION TO BE SHOWN (IF APPLICABLE)

COUNTY	APPLICANT		
(____)	(____)	1.	All existing and proposed buildings and structures, including buildings to be removed.
(____)	(____)	2.	The proposed use of all buildings and structures.
(____)	(____)	3.	All adjacent streets and roads and their names.
____)	(____)	4.	Access to the property: pedestrian, vehicular, and service.
___)	(____)	5.	Access to buildings: size and location.
____)	(____)	6.	Pedestrian walkways: (1) Location, (2) Width, and (3) Type of pavement and type of slip-resistant finish.
____)	(____)	7.	Proposed street improvements and dedications. (a) service utilities
___)	(____)	8.	Existing and proposed off-street parking and loading areas. (a) Location (b) Type of paving (c) Number of spaces (detailed layout) (d) Internal circulation pattern (e) Dimension of all parking and loading spaces

(____) (____) 9. The following measurements:

a. All dimensions of property or properties.

b. All dimensions of buildings and structures (including height and elevation plan, if available).

c. The distance of all buildings, structures, fuel tanks or storage tanks from property lines.

d. The distance between all buildings, structures, fuel tanks and storage tanks.

e. Contours of land, if natural slope is greater than ten percent.

f. Irrigation canals or easement.

(____) (____) 10. Walls, retaining wall, and fences: Location, height, and type of material.

(____) (____) 11. Existing and proposed signs: (1) Location, (2) type of lighting, (3) face area, and (4) height.

(____) (____) 12. Existing and proposed on-site lighting:

(a) Location

(b) Type of lighting

(c) Height

(d) Method of controlling glare and illumination.

(____) (____) 13. Landscaping: location and type of plant material.

(____) (____) 14. All existing wells and private sewage disposal systems within 150' adjacent to each other shall be delineated.

(____) (____) 15. Handicap requirements (waiver).

(____) (____) 16. Show all natural drainage channels.

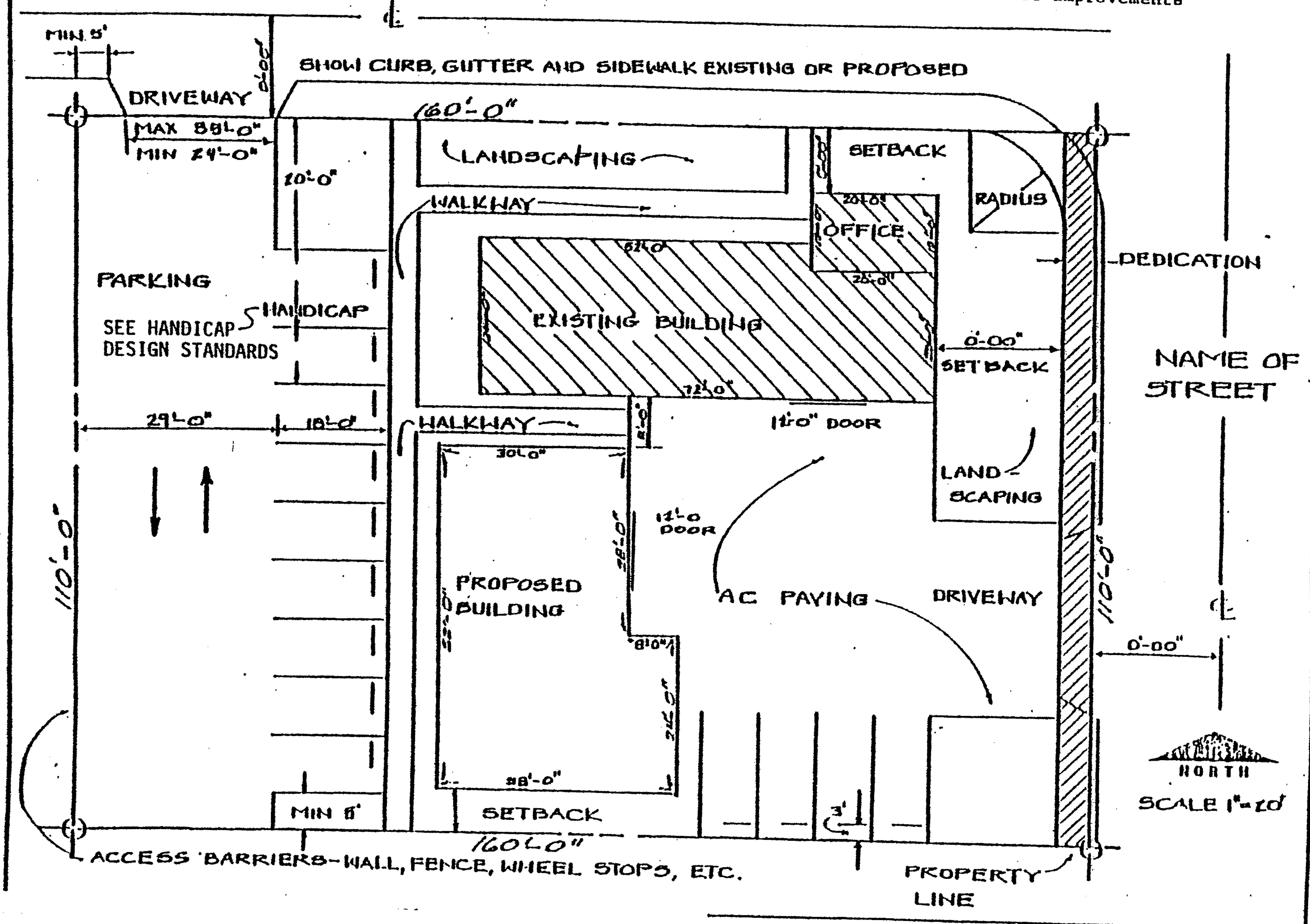
(____) (____) 17. A floor plan shall be submitted for places of assembly to calculate parking.

(____) (____) 18. An employee and vehicle statement shall be submitted for industrial and manufacturing uses to calculate parking.

(____) (____) 19. Show where solid waste will be picked-up. Garbage trucks require a minimum turn around radius of 37 feet.

EXAMPLE

NOTE: Show utilities or other street improvements



Development

Services

Division

Operational Statement Checklist

DEPARTMENT OF PUBLIC WORKS AND PLANNING

It is important that the operational statement provides for a complete understanding of your proposal. The operational statement that you submit **must** address all of the following that apply to your proposal. **Your operational statement must be typed or written in a legible manner on a separate sheet(s) of paper. Do not submit this checklist as your operational statement.** It should serve only as a guide for preparing a complete statement.

____ 1. **Nature of the operation--what do you propose to do? Describe in detail.**

____ 2. **Operational time limits:**
Months (if seasonal): Days per week:
Hours (from ______ to ______) Total hours per day:
Special activities: Frequency: Hours: Are these indoors or outdoors?

____ 3. **Number of customers or visitors:**
Average no. per day: Maximum no. per day: Hours (when they will be there):

____ 4. **Number of employees:**
Current: Future: Hours they work: Do any live on-site as a caretaker?

____ 5. **Service and delivery vehicles:**
Number: Type: Frequency:

____ 6. **Number of parking spaces for employees, customers, and service/delivery vehicles.**
Type of surfacing on parking area.

____ 7. **Are any goods to be sold on-site? If so, are these goods grown or produced on-site or at some other location?** Explain.

____ 8. **What equipment is used?** If appropriate, provide pictures or brochure.

____ 9. **What supplies or materials are used and how are they stored?**

____ 10. **Does the use cause an unsightly appearance?**
Noise? Glare? Dust? Odor?
If so, explain how this will be reduced or eliminated?

____ 11. **List any solid or liquid wastes to be produced.**
Estimated volume of wastes: How and where is it stored?
How is it hauled, and where is it disposed? How often?

____ 12. **Estimated volume of water to be used (gallons per day).** Source of water?

____ 13. **Describe any proposed advertising including size, appearance, and placement.**

____ 14. **Will existing buildings be used or will new buildings be constructed?**
Describe type of construction materials, height, color, etc. Provide floor plan & elevations, if appropriate.

____ 15. **Explain which buildings or what portion of buildings will be used in the operation.**

____ 16. **Will any outdoor lighting or an outdoor sound amplification system be used?**
Describe and indicate when used.

____ 17. **Landscaping or fencing proposed?** Describe type and location.

____ 18. **Any other information that will provide a clear understanding of the project or operation.**

PUBLIC HEARING WAIVER

I, ______________________________, the owner of the parking facility located at ______________________________, have elected to waive the required public hearing before the Board of Supervisors relating to the enforcement of parking for the physically handicapped, per Section 855-I-4.E. of the Fresno County Zoning Ordinance. I declare the parking facilities will be held open for use of the public, subject to approval of Site Plan Review No.________.

____

OWNER - (Signature)

EMPLOYEE AND VEHICLE STATEMENT FOR SITE PLAN REVIEW

Total number presently employed	1
Number of employees to be added	1
Number of salesmen	0
Total number of trucks and/or other company vehicles	0
Number of trucks and/or company vehicles to be added	0

____
Signature of Owner

Richard L Win
____
Signature of Authorized Representative and Title of Individual

DIRECTOR
STARWOOD POWER - MIDWAY LLC

SECTION 3 FACILITY DESCRIPTION AND LOCATION

3.1 INTRODUCTION

The Starwood Power–Midway, LLC Peaking Project (Midway) is a proposed simple-cycle electric generating facility located within western Fresno County adjacent to the Panoche Hills and east of the San Benito county line. The 5.6-acre project site is approximately 50 miles west of the city of Fresno and approximately 2 miles east of the Interstate 5 (I-5). The proposed facility will include two (2) FT8-3 SwiftPac Combustion Turbine Generator (CTG) units installed in a simple-cycle power plant arrangement. The gas turbines are equipped with a water injection system to reduce production of nitrous oxides (NOx), a selective catalytic reduction system (SCR) with 19% aqueous ammonia to further reduce NOx emissions, and an oxidation catalyst to reduce carbon monoxide (CO) emissions. The nominal plant power rating will be 120 megawatts (MW).

Each SwiftPac unit has two (2) FT8-3 combustion gas turbines that drive opposite ends of a single electric generator. The FT8 generating package has been in operation at locations around the world since 1992. The FT8 package is a modernization and more efficient version of the older Pratt & Whitney (P&W) FT4 package, which was sold for over 30 years, and is still operating in many locations, including California. The most critical components of the FT8 package are the P&W GG8 engines which have been adapted from the JT8D commercial aviation engine as its core. The JT8D heritage dates back to the early 1960's and P&W has sold nearly 15,000 of those engines.

On a worldwide basis there are multiple FT8 packages operating or under construction, in sum containing a total of 289 GG8 engines. Some are single engine applications and some are dual engine applications. These 289 units have a total of nearly 2 million operating hours. There are 5 dual engine FT8 applications in California operated by CalPeak Power, LLC that have been in operation since 2002 and have demonstrated an average availability of 97% since startup.

Three models of the FT8 package that have been developed and are labeled FT8-1, FT8-2, and FT8-3. The FT8-1 model uses water injection into the combustor to control NOx formation and was the original version of the GG8 engine developed in the early 1990's. In the mid 1990's a combustor was developed to reduce NOx formation without water injection (DLN or dry low NOx) and this version of the GG8 engine was labeled FT8-2. All other aspects of the FT8-1 and FT8-2 engines are identical. The power output of the FT8-2 engines are less than the FT8-1 engines because the water injection contributes to mass flow through the engine in addition to reducing NOx formation.

The FT8-3 model (proposed for use at Midway) is also a slight modification of the FT8-1 engine and was introduced in 2004. The FT8-3 uses some thermal barriers and coatings traditionally used in other P&W aviation engines in the hot section of the turbine. This improvement in the hot section of the turbine allows the engine to generate approximately 15% more power than the FT8-1 at essentially the same cost. This hot section design has been used in aviation engines for over 10 years and was migrated to the land based engines in 2004. There are now 54 FT8-3 engines operating or under construction around the world. The FT8-3 engine is only offered with water injection to control NOx production.

The two SwiftPac units proposed for Midway consist of dual engine FT8-3 engines with each unit nominally rated at 60MW under ISO (International Organization for Standardization) conditions. These units are similar to the five FT8-2 units that CalPeak Power operates in California (the FT8-2 units are nominally rated at 50MW). As stated previously, these CalPeak units have demonstrated an availability of 97% since operation began in 2002.

In summary, the P&W FT8 units have been a reliable and proven technology for over 15 years and for 30 years prior to that in the form of the less efficient FT4 units. The dual engine design provides advantages in reliability and operating flexibility since the units can be operated with one engine. Midway will be efficient, environmentally compliant and reliable with the use of FT8 technology.

Typical operating hours for the Midway site will be comparable to the existing CalPeak Panoche plant located adjacent to the Midway site. The Midway plant will have the same heat rate as the CalPeak Panoche plant, and therefore would be dispatched for system operation in a similar manner. Currently the CalPeak Panoche plant runs substantially less than 400 hours per year, averageing approximately 4.5 hours per start.

3.2 FACILITY LOCATION

The project site is located in the unincorporated area of western Fresno County approximately 50 miles west of the city of Fresno. The site is adjacent to the Panoche Hills and east of the San Benito County line. West Panoche Road lies just north of the site. The nearest intersections are West Panoche Road and South Fairfax Avenue approximately one mile to the northeast and West Panoche Road and I-5 approximately 2 miles to the southwest. The site is more specifically described as the Southwest Quarter of Section 5, Township 15, Range 13 East, on the USGA Quadrangle map. (Figure 3.2-1). The assessor parcel number (APN) is 027-060-78S.

3.3 SITE DESCRIPTION

The facility will be situated on approximately 5.6 acres of land within a 128-acre parcel. The plant site is leased by the applicant from the property owners. Portions of the 128-acre parcel, not used for electric generation facilities, are currently in agricultural production with pomegranate trees. The 5.6-acre site is used as a storage-yard by CalPeak Power and contained several large pieces of equipment and items used at the CalPeak Panoche plant directly southwest and adjacent to the site. A Wellhead Peaker Plant is southeast and the PG&E Panoche Substation is to the west. The land surrounding these electric facilities is agricultural. The site is relatively flat and supports sparse growth of annual, ruderal weeds and grasses.

3.3.1 Topography

Site topography, shown in Figure 3.3-1, is generally flat. The elevation ranges from approximately 400 feet above mean sea level (msl) at the northwest corner of the site closest to West Panoche Road and gently slopes to the southeast where the elevation is approximately 395 feet above msl. . The natural earth material consists of layers of silt, lean clay and sand.

3.3.2 Geologic Setting and Seismology

A general description of Site geology and seismology is outlined in the sections which follow.

3.3.2.1 Subsurface Conditions

During July of 2006 a field geotechnical exploration was conducted by Kleinfelder, Inc. Nine test borings were drilled within the project site with depths of up to 41.5 feet with the exception of one boring to a depth of 101.5 feet below existing ground surface. Soils encountered include silt near the surface underlain by discontinuous layers of silty sand, lean clay and poorly graded sand. No Groundwater was encountered within the depths explored.

3.3.2.2 Seismic Conditions

The project site and its vicinity are in an area traditionally characterized by low seismic activity. There are no known faults that cut through the local soils in or near the site. The site is not located in and Alquist-Priolo Earthquake Fault zone. Review of published data, the current geologic framework, and the tectonic setting of the proposed development reveal that the primary source of seismic shaking at the Project site is anticipated to be the Great Valley Fault System, Segment 12, which is located approximately 4.7 miles southwest of the site.

There are no anticipated geotechnical factors at the Project site that are unique and require special seismic consideration. The Project site is within Seismic Zone 3 of the Uniform Building Code (UBC). The California Energy Commission (CEC, 1989) recommends that non-nuclear power plants be designed to the level of conservatism implied by the Uniform Building Code (ICBO, 1997). Seismic Zone 4 of the UBC is the highest earthquake hazard zone recognized by the code and the Midway project will build to the specifications required for Seismic Zone 4.

3.3.2.3 Liquefaction Potential

Liquefaction and associated settlement of soils due to ground shaking generally occurs under four specific conditions. 1) The subsurface soils are in a relatively loose state; 2) the soils are saturated; 3) the soils are non-plastic; 4) ground shaking is of sufficient intensity to act as a triggering mechanism. The absence of groundwater (mentioned previously in Section 3.3.2.1) precludes these conditions being present and therefore the potential for liquefaction to occur is remote.

3.3.3 Hydrological Setting

The project lies in the western portion of the San Joaquin Valley which is characterized as semi-arid with relatively mild winters and long, hot, dry summers. Intermittent wet periods occur making the area's average precipitation approximately 11 inches. Average annual temperature is 63.3 degrees. The nearest weather station to the site is located outside of Fresno, approximately 45 miles to the east.

3.3.3.1 Surface Water

There are no long-term natural or artificial water bodies in the vicinity of the site, except for the California Aqueduct over two (2) miles to the East. Surface streams are dry most of the year. Flow in streambeds in the Panoche Fan area occurs as brief runoff events following precipitation. The largest streambed in the area is Panoche Creek, which flows from the southwest approximately two miles northwest of the project site. In the immediate vicinity of the site, precipitation runoff occurs as sheet flow to the northeast across the alluvial fan surface of the site. The entirety of the Midway site is included within the special flood hazard area inundated by the 100-year flood with no base flood elevation determined (Zone A) on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map.

3.3.3.2 Groundwater

Groundwater in the western San Joaquin Valley occurs in thick alluvial aquifers that fill the valley. Aquifers underlying the site include a lower confined zone and an upper semiconfined zone that are separated by the Corcoran Clay of the Tulare Formation. The site is located in the Westside Sub-basin of the San Joaquin Valley Groundwater Basin.

Historically, groundwater was extensively used for agricultural development of the area surrounding the site. Groundwater withdrawal caused compaction of aquifer systems and extensive ground subsidence. Pumping of groundwater for agricultural use was substantially reduced following delivery of surface water to the region in the late 1960s, and land subsidence due to groundwater withdrawal has slowed considerably or stopped in most of the San Joaquin Valley. Agricultural use of groundwater in the area is limited except in times or drought when surface water supplies are curtailed.

3.4 FACILITY DESCRIPTION

3.4.1 Overview

The Midway project will consist of two (2) FT8-3 SwiftPac Combustion Turbine Generator units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. The two (2) FT8-3 CTG units will be part of a power plant that will also include the following Balance of Plant (BOP) equipment/systems:

- One (1) CTG Main Step-up transformer (13.8/115 kV)
- An SCR/CO catalyst system that will be implemented on both CTG units to provide post-combustion emissions control. The facility will include an aqueous ammonia storage and delivery system in support of the SCR catalyst system
- A Water Treatment system starting with a Reverse Osmosis (RO) unit will feed a demineralizer to provide high-purity water to the gas turbines for water injection / inlet fogging. Water injection will be utilized for control of NOx emissions during combustion. Inlet fogging will be utilized to provide cooling of inlet air. The water treatment system will

include one (1) 75,000 gallon Raw Water Storage Tank, an RO unit, a Mobile Water Treatment system (i.e., Demineralizer Trailers on a pad), two (2) 75,000 gallon Demineralized (DI) Water Storage Tanks, and a forwarding system to deliver the demineralized water to the gas turbines.

- A Natural Gas Fuel system that will supply natural gas to the gas turbines in a manner that meets the required engine specifications (i.e., pressure, flow, quality). The project will tie into the existing 6" diameter fuel natural gas supply pipeline for the CalPeak Panoche plant, which in turn ties into the PG&E main gas truckline running along West Panoche Road. A separate meter and 6" line will supply Midway with natural gas.
- A Compressed Air system that will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include two (2) air compressor skids and one (1) dryer skid.
- A Waste Water system to collect oily water waste from equipment locations. This system will include a CTG drain system with storage tank(s) to contain drainage from the CTG units. Oily waste will be collected in sumps and pumped to above-ground storage tanks (ASTs).The oily waste will be sent off-site for disposal.
- A Site Stormwater Drainage system that will handle drainage of rainwater from non-equipment locations.
- A lined evaporation pond that will collect discharge wastewater from the RO Unit.

3.4.2 List of Major Equipment

The following is an all inclusive list of the equipment which will be part of the Midway Project.

1. Two (2) FT8-3 SwiftPac Combustion Turbine Generator units. Each CTG unit includes, but is not necessarily limited to the following major assemblies:

   a) Two (2) CTG Driver Assemblies with engines, lube oil systems, enclosures
   b) One (1) Electric Generator
   c) One (1) Electric Generator Lube Oil System
   d) One (1) Electric Generator Enclosure With Silencers
   e) One (1) CTG Control House
   f) One (1) 15 kV Bus Duct Assembly
   g) Two (2) CTG Inlet Silencers
   h) Two (2) CTG Inlet Filter Houses with ladders and platforms
   i) Two (2) Engine Heater Skids
   j) One (1) Hydraulic Start Skid
   k) Two (2) Gas Fuel Metering and Filter Skids
   l) Two (2) Water Injection Skids for NOx Control
   m) Two (2) Fire Protection Skids

n) Two (2) Buffer Air Heat Exchangers
o) Interconnecting Field Piping
p) Cable Tray System
q) One (1) Fogging Pump/Control Skid – for Inlet Air Cooling
r) Two (2) Fogging Inlet Spool Pieces
s) One (1) Water Wash Skid – per unit

2. One (1) Gas Fuel Coalescer/Filter
3. Two (2) SCR/CO Catalysts - each with 50' Exhaust Stack
4. Two (2) Aqueous Ammonia Storage Tanks
5. One (1) Aqueous Ammonia Forwarding Skid
6. Two (2) Aqueous Ammonia Injection Control Skids
7. One (1) Wash Down Drain Tank
8. Two (2) Continuous emissions monitoring system (CEMS) Monitors
9. Two (2) DI Water Tanks (75,000 gallons each)
10. One (1) Raw Water Tanks (75,000 gallons)
11. Provision for Mobile Water Treatment Trailers
12. One (1) DI Water Forwarding Skid
13. Two (2) Air Compressor Skids
14. One (1) Air Dryer/Tank Skid
15. One (1) Generator Step-Up Transformer (13.8/115 kV)
16. One (1) 480V Auxiliary Transformers
17. 480V Switchgear
18. Plant MCC's
19. One (1) 1,000 Gallon CTG Drain Holding Tanks – per unit
20. Reverse Osmosis (RO) Unit
21. One (1) Oily Waste Storage Tank (4,700 gallon)

Table 3.4-1 provides further information about key equipment.

TABLE 3.4-1
DIMENSIONS OF KEY EQUIPMENT

Dimensions of Key Equipment				
Qty.	**Description**	**Length (Feet)**	**Width (Feet)**	**Height (Feet)**
2	Combustion Turbine Generator Units	120	35	33 (Top of CTG Inlet Air Filter)
1	GSU Main Transformer Dead End Structure	50	25	50
2	Exhaust Stack	N/A	15 - diameter	50
2	Primary Control Enclosure	45	12	15
1	Secondary Control Enclosure	40	15	15
3	Water Storage Tanks (Vertical)	23' diameter	n/a	25
2	Ammonia Injection Skids	10	10	10
1	Ammonia Fwd Skid	10	10	10
2	Ammonia Tank (Horizontal)	16'	n/a	12' diameter
2	SCR/CO Catalyst	65	20	45
1	DI Water FWD Skid	10	10	10
1	RO Unit	12.5	3.7	7.1

All structure dimensions shown are approximate. Actual dimensions will be determined during detailed design.

3.4.3 Site Access

Site access from West Panoche Road would be provided via a 20-foot wide access roadway easement adjacent (east of) the PG&E Substation. From a proposed entrance gate, which would be located just south of West Panoche Road, the proposed access roadway would be graded gravel and run for approximately 250 feet south and east to the site. At the project site the proposed roadway would become asphalt, with a vehicle turnaround area providing access to the project equipment. The asphalt portion of the proposed roadway would be approximately 1,150 feet.

3.4.4 Site Layout

The site layout shows the location and size of the proposed plant facilities including off-site improvements. The plant facilities have been arranged for optimum use of the property as well as to ensure ease of maintenance and operation.

Off-site improvements associated with the project include an approximate 300-foot electric transmission line to tie into the PG&E Substation, a 1,200-foot underground water pipeline connecting the project to the existing CalPeak Panoche plant well adjacent to the project site, 50 feet of new gas transmission line and a gas metering set which will tap into the existing PG&E gas trunkline.

Midway includes the plant site and all of the described on-site and off-site improvements.

3.4.5 Power Plant Cycle

Approximately 60 MW of electricity is produced by each of the two CTGs. Output is dependent on inlet air ambient conditions and inlet evaporative cooling. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. The CTGs are equipped with SCRs to reduce NO_x, CO, and volatile organic compound (VOC) emissions.

The following paragraphs describe the major components of the generating facility.

3.4.5.1 Gas Turbine Generator

The Midway project will use two (2) FT8-3 SwiftPac CTG units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. Each CTG unit will consist of two (2) FT8-3 combustion gas turbines and one (1) electric generator. The FT8-3 combustion gas turbines are aero-derivative engines designed by Pratt and Whitney Power Systems.

3.4.5.1.1 CTG Water Injection Combustors

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O_2. The FT8-3 SwiftPac units will also limit CO levels at the exit of each CTG to 19 ppmvd referenced to 15% O_2.

3.4.5.1.2 Post-Combustion Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

Aqueous ammonia (NH_3) will be introduced upstream of the SCR catalyst. The catalyst causes NH_3 to combine with NO_x, producing N_2 and H_2O. The SCR system will limit NO_x emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. The SCR/CO Catalyst system will also limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2.

The emission rates include estimates of particulate (PM_{10}) emissions. A stack exit PM_{10} level of 3.7 pounds per hour for each SwiftPac unit (two turbines operating) is expected at 100% power, based on results for source tests conducted over several years at the CalPeak Panoche facility.

CEMS will be utilized to monitor NOx, CO, and oxygen levels at the stack exit.

3.4.5.1.3 Emissions Dispersion

The exhaust gases will exit through a vertical stack. The stack discharges the gases to the atmosphere at a minimum temperature of approximately 730 °F and at a height of 50 feet above finished grade. At this temperature and elevation the gases mix with ambient air and are dispersed.

3.4.5.2 Performance Data

Predicted performance data play a major role in the selection of turbine generators. Key performance data are power output, fuel input and heat rate. Refer to Figures 3.4-3A, 3.4-3B, and 3.4-3C for heat/mass balances at 100% power for three different ambient conditions (low temp, high temp, and ISO conditions). Note that these heat/mass balances are per SwiftPac Unit. The plant will have two SwiftPac Units – each with the same performance characteristics.

Gas turbine power output and efficiency are greatly affected by atmospheric conditions and load variations. Power output is roughly proportional to mass flow which increases as the inlet air becomes colder and denser. Higher humidity makes the air less dense and also decreases the oxygen level per unit mass. Consequently, more fuel can be added and more power is produced at lower temperatures and humidity. Alternatively, less fuel can be added and less power is produced at higher temperatures and humidity. Turbine efficiency decreases as conditions depart from the optimum full-load design point.

3.4.5.3 Emissions Data

Air pollutant emissions are affected by turbine design and operating conditions. NOx startup and shutdown emissions are based upon actual data recorded for the CalPeak units and standard industry formulas.

3.4.6 Heat Rejection System

The FT8-3 SwiftPac unit auxiliary heat exchangers are all air-cooled fin-fan types. The SCR/CO Catalyst system also includes an air-cooled heat exchanger to maintain stack temperature less than the catalyst design upper limit.

3.4.7 Major Electrical Equipment and Systems

An overall one-line diagram of the proposed facility electrical generation and distribution system is shown in Figure 3.4-4 A & B. The CTG produces power at 13.8 kV. The generator output passes through a step-up transformer where the voltage is increased to a transmission level of 115 kV for interconnection to the existing CalPeak Peaker Generator tie line. A portion of the plant output is converted to lower voltages to be utilized on-site for power station auxiliaries via a 480V Auxiliary Transformer. A 125 Voltage Direct Current (VDC) system provides battery power for an alternating current (AC) uninterruptible power supply (UPS) and for direct current (DC) control systems.

3.4.7.1 Step-up Transformers

The FT8-3 SwiftPac Combustion Turbine Generator (CTG) units generate power at 13.8 kV. The electricity generated at 13.8kV will be stepped up to 115 kV for transmission by a three-winding, oil-filled, generator step-up transformer (GSU). The transformer is anchored on concrete foundations that also provide oil containment. The high side of the step-up transformer is terminated at the plant 115kV switchyard. Surge arrestors are installed on the high voltage bushings of the transformer to protect the transformer from surges due to lightning strikes, switching or other disturbances on the 115 kV system. Transformer impedances and turns ratio are to be selected to optimize 115 kV system volt amps reactive (VAR) support by the generators. Transformer will have no-load tap changer at the high voltage side.

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to take care of the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be solidly grounded.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to motor control centers (MCCs). The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.2 115kV Switchyard

The 115 kV transmission system will enter the Midway switchyard via the dead end structure. An 115 kV circuit breaker with twelve integral current transformers provides the switching for installation. 115 kV air break disconnect switches provide breaker isolation as required by Code. A set of 115 kV potential devices connected to the dead end structure provide system voltage for Utility metering and site voltage monitoring schemes. One set of current transformers at the 115 kV breaker is to be specified with metering accuracy and is to be used as the required input to the utility metering package

Control, protection and monitoring panel or devices for the switchyard will be located in the electrical building and generation control module. Monitoring and alarms will be available to the PLC operator workstations in the control room. The 125Vdc battery system will provide control and protection voltage to circuit breakers.

The switchyard design will meet the requirements of the National Electrical Safety Code-ANSI C2.

A grounding grid will be provided to control step and touch potentials in accordance with IEEE Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required. The substation ground grid will be tied to the plant ground grid.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

The protection will be designed to maintain redundancy at the 115 kV level. The transformer will be protected by differential, over current and restricted ground fault loops. A second and redundant protection using separate instrument transformers will provide protection for the 115 kV breaker, transformer and generators breakers. There will be a breaker failure scheme associated with the 115 kV breaker. Interfaces requited with the PG&E system are included in the design. Each generator protective system has a breaker failure scheme. The 115 kV circuit breaker will have 2 redundant trip coils.

Interface with PG&E's supervisory control and data acquisition (SCADA) system will be provided. Interface will be at the interface terminal box and RTU. Communication between the facility switchyard and the control building to which it is connected will be included.

3.4.7.3 AC Power Distribution

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to handle the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be high resistance grounded to minimize the need for individual ground fault protection.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to MCCs. The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.4 DC Power Supply

The DC power supply system for BOP loads will consist of two 125V DC battery bank, two 125V DC full capacity battery chargers, metering, ground detectors, and distribution panels. One 125V DC battery bank will be dedicated to the essential service uninterruptible power supply (UPS) system. The other 125V DC battery bank will feed all other station DC loads. Additional 125V DC systems may also be supplied as part of the CTG equipment.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480V, 3-phase AC power from the AC power supply (480V) system and continuously float-charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions when power from the AC power supply (480V) system is unavailable, the battery will supply DC power to the DC power supply system loads. Recharging of a discharged battery will occur whenever 480V power becomes available from the AC power supply (480V) system. The rate of charge will be dependent on the characteristics of the battery bank, battery charger, and the connected DC load during charging. However, the anticipated maximum recharge time will be 12 hours.

The BOP 125V DC system will be used to provide control power to the 4,160V switchgear, the 480V SUSs, and to critical control circuits.

3.4.7.5 Uninterruptible Power Supply (UPS) System

The CTGs will also have an essential service 120V AC, single-phase, 60 hertz power source to supply AC power to essential instrumentation, critical equipment loads, and unit protection and safety systems that require uninterruptible AC power. Both the essential service AC system and the DC power supply system will be designed to ensure that all critical safety and unit protection control circuits always have power and can take the correct action on a unit trip or loss of plant AC power.

The essential service AC system will consist of one full-capacity inverter, a solid-state transfer switch, a manual bypass switch, an alternate source transformer and voltage regulator, and AC panel boards for each CTG.

The normal source of power to the system will be from the DC power supply system through the inverter to the panel boards. A solid-state static transfer switch will continuously monitor both the inverter output and the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter-static transfer switch for testing and maintenance without interruption to the essential service AC loads.

3.4.7.6 Emergency Power System

In the event of a total loss of auxiliary power, or in situations when the utility transmission system is out of service, the emergency power required for emergency lighting and CTG critical loads, such as turbine lube oil pumps, will be provided from batteries.

3.4.8 Natural Gas Fuel System

The FT8-3 SwiftPac Combustion Turbine Generator units will operate solely on natural gas. Natural gas will be supplied from PG&E's trunk line system immediately to the north of the property and would require approximately 50 feet of new line at the Midway site in order to tap into the existing PG&E system. Each FT8-3 SwiftPac CTG unit requires an approximate maximum feed of 625MMBtu/hr at 500-600 psig fuel gas pressure, and approximately 12,000 standard cubic feet per minute (SCFM) of flow at ISO, 100% power conditions. The natural gas supply pipeline will supply the required inlet pressure without need of supplemental compression.

3.4.9 Water Supply and Treatment

The process uses for water are NOx control and inlet cooling. The Midway project has three viable alternate water supply sources:

1. The existing CalPeak Panoche Well (Upper Aquifer Groundwater)
2. Irrigation Return Flow – Agricultural Backwash Pond
3. New Deep Well at Project Site (Lower Aquifer Groundwater)

Regardless of the water supply source, the plant will store water in three 75,000-gallon storage tanks, one for raw water and two for demineralized water. The Midway plant will use an RO unit to filter the water prior to demineralization. The RO wastewater will be discharged into a 25,000 square foot pond for evaporation.

The plant water needs can be satisfied from any of the proposed sources. It should be noted that if the facility were to operate in excess of 400 hours in a year, the quantity of the wastewater generated could exceed the capacity of the evaporation pond. However, if the plant were to operate for enough hours so that the RO wastewater evaporation pond reaches its design capacity, the RO unit would be shut down and the demineralization units would run on raw water. This approach would eliminate a RO wastewater flow but would require more frequent replacement of the demineralizer (about once every other day). A vendor will perform demineralizer unit regeneration off site.

3.4.9.1 Water Balance and Supply Requirements

Essential plant functions requiring water are inlet cooling of the CTG inlet air which is done via the SwiftPac Inlet Fogging skid, water injection for NOx control during CGT combustion, and utility water for washdown and other purposes. The peak supply flow rate required at the site is approximately 138 gpm.

3.4.9.1.1 Water Balance

Plant water supply requirements and water balance calculations for the Midway project are tabulated and illustrated in Figure 3.4-5 of this document. The Figure provides peak water usage supply conditions. More specifically, Midway peak water requirements are as follows.

The peak flow rates are:

NOx Control	98GPM
Inlet Fogging	40GPM

During a typical 4.5 -hour operating day the plant will require approximately 49,680 gallons of water. The operating water requirements are based upon the expected 400 annual service hours and the Power Purchase Agreement (PPA) maximum 4000 hours are shown in Table 3.4-2 below.

TABLE 3.4-2
MIDWAY ANNUAL WATER SUPPLY REQUIREMENTS

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Expected Operating Hours (400)	47	101	176	76	**400**
Water Consumption (acre-feet)	1.6	3.4	6.0	2.6	**13.6** (4.4 million gallons)
PPA Maximum Hours (4,000)	800	800	1,400	1,000	**4,000**
Water Consumption (acre-feet)	27.1	27.1	47.4	33.9	**135.6** (44.2 million gallons)

*The data is based upon operating at maximum water flow conditions at 114 degrees

3.4.9.1.2 Water Supply Sources

The Midway project has the option to use a number of alternate water sources.

Existing CalPeak Panoche Well (Upper Aquifer Groundwater) The Midway project can use well water from the existing well at the neighboring, CalPeak Panoche project., The 400-foot deep well has been tested to produce 100GPM and has TDS of approximately 3,400 ppm.

Irrigation Return Flow – Agricultural Backwash Pond The Midway site is located on a 128-acre parcel of land owned by PAO Investments, LLC. A large portion of this parcel and approximately 7,000 acres of land in the region is farmed by the Baker Farming Company, LLC (Baker). To take advantage of the economies of scale, Baker has developed a water delivery system that serves all of the property it farms in this area. The water system is owned and operated by Baker and utilizes approximately 24,000 acre-feet of water in the Bakers' farming operations, annually. Through a process described in Section 5.5 – Water Resources, the farming operations (primarily filter irrigation water filter backwash) produce approximately 160 acre-feet of wastewater on an annual basis which is discharged in an evaporation pond. Wastewater from this pond could potentially supply Midway's water needs.

Using the Baker's irrigation return flow water would require installing approximately 2-mile of piping in order to access the water source.

New Deep Well at Project Site Lastly, the Midway project could drill a new 1,500-foot well to access the lower aquifer where the water has less TDS than the existing CalPeak Panoche well (1,200 ppm as compared to 3,400 ppm TDS). The well would be located adjacent to the RO unit in order to limit the amount of piping needed.

3.4.9.2 Water Quality

Table 3.4-3 summarizes the expected TDS concentration for each source.

TABLE 3.4-3
SUPPLY WATER ANALYSIS

Source	TDS (ppm)
1. The existing CalPeak Panoche Plant Well (Upper Aquifer Groundwater)	3,400
2. Irrigation Return Flow – Agricultural Backwash Pond	190
3. New Deep Well at Project Site (Lower Aquifer Groundwater)	1,090

3.4.9.3 Water Treatment

The Midway site has included in its design a RO unit through which the supply water would first be processed. After being processed through the RO unit the water would then be demineralized. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required DI water. This will involve use of rented mobile demineralizer trailers that will reside on a pad (See Figure 3.4-1). The rental company will perform regeneration of these units at their facility.

The DI water produced by the trailers will meet the following water quality limits required by PWPS standards:

* Total Solids	<1.0 PPM	ASTM D1888
* Sodium	<0.10 PPM	ASTM D2791
* Silica	<0.02 PPM	ASTM D859
* Conductivity	<1.0-1.5 Micromho/cm	ASTM D5391

Demineralized water will be stored in two (2) 75,000-gallon tanks. A forwarding system will be utilized to provide this DI water to the gas turbines within the required flow and pressure limits.

3.4.9.4 Waste Water Treatment Systems

The Midway project will utilize two different systems to manage wastewater.

3.4.9.4.1 Treatment and Disposition of Liquid Process Wastes

Wastewater generated by the RO process will be conveyed by gravity to an on-site, lined evaporation pond (which can accommodate 30 acre-feet per year) on the east side of the Midway site. The average wastewater generation rate that will require disposal is expected to be approximately 25gpm. Residue from this pond would be disposed of in a permitted landfill.

3.4.9.4.2 Plant Drains and Wash-down

A sump will collect oils and chemicals that could drain from the gas turbine exhaust floor drains, the generator floor drains, the transformer containment area, the equipment wash down areas, and the ammonia storage. Oil leakage from equipment is expected to be minimal. Composition will be similar to standard parking lot impacts. Nonetheless, all equipment that has potential for significant leakage of oil or hazardous chemicals, such as glycol coolants, will be located within spill containment basins which would also flow into the sump. A sump pump will convey this oily waste water/chemical drain water to an on-site 4,700 gallon storage tank. Waste from the storage tank will be pumped out and moved offsite. The storage tank will include level and leak detection instrumentation.

3.4.9.4.3 Domestic/Sanitary Wastewater

The project will not require sanitary waste systems. Portable sanitary units will be delivered and maintained by a local service company.

3.4.9.4.4 Stormwater Drainage

Rainfall from the project site will be predominantly drained by sheet flow and efforts will be made to maintain the integrity of the existing drainage patterns, wherever possible. Based on the final site-grading plan, some isolated areas may require underground stormwater collection and drainage piping.

3.4.10 Waste Management

The project will generate a variety of non-hazardous and hazardous wastes during construction and operation (see Tables 3.4-4 and 3.4-5). These include liquids and solids from the wastewater system (discussed in Section 3.4.9.4), replaceable parts, rags, and other waste materials and chemicals produced during construction and operation.

Handling of hazardous wastes is discussed in Section 3.4.

3.4.10.1 *Solid Waste – Non-Hazardous*

3.4.10.1.1 Construction Waste

Inert solid wastes resulting from construction activities may include lumber, excess concrete, metal and scrap, and empty non-hazardous containers. Management of these wastes will be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup of wastes with disposal at local Class III landfills. The total amount of solid waste generated by construction activities has been estimated to be similar to that for normal commercial construction. It is not expected to result in a significant impact on public health or to cause adverse effects on local landfill capacity. Table 3.4-4 provides an overview of the waste streams anticipated for the construction phase of the project. For projected quantities refer to Section 5.14.

3.4.10.1.2 Operations Waste

Inert solid wastes generated at the facility during operation are predominantly routine maintenance wastes. Scrap materials such as paper, packing materials, glass, metal, and plastic will be segregated and managed for recycling. Non-recyclable inert wastes will be stored in covered trash bins in accordance with local ordinances and picked-up by an authorized local trash hauler on a regular basis for transport and disposal in a suitable landfill in the area. Table 3.4-5 provides an overview of the waste streams anticipated for when the project is operational. For projected quantities refer to Section 5.14.

3.4.10.2 *Liquid Wastes – Non-Hazardous*

Non-hazardous liquid wastes produced in the facility consist of wastewater system wastes. Handling and disposal of these wastes is discussed in the Waste Management Section (Section 5.14) as well as the Hazardous Materials Handling Section (Section 5.15) of this application. Skim oil collected from equipment drains and other liquids drained from equipment will generally be treated as hazardous due to possible heavy metals content.

TABLE 3.4-4
SUMMARY OF CONSTRUCTION WASTE STREAMS AND MANAGEMENT

Waste Stream	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Disposal Method
Paper, wood, glass, and plastics from packing materials, waste lumber, insulation, and empty non-hazardous containers	Non-hazardous	Intermittent	None	Weekly collection for recycling and/or disposal at a Class III Landfill
Residual Solids from Evaporation Pond (dirt and concrete particles)	Non-hazardous	One time at end	None	Excavate at end of construction and spread onsite
Empty hazardous material containers-drums	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recondition, recycle, or waste disposal at Class I Landfill
Used and waste lube oil during Combustion Turbine Generator (CTG) Lube Oil Flushes	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recycle
Spent batteries; lead acid	Hazardous	Every 90 days	Store for < 90 days	Recycle
Spent batteries; alkaline type, sizes AAA, AA, C, and D	Recyclable	Every 90 days	Store for < 90 days	Recycle
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Periodically pumped to tanker truck by licensed contractors	None	Collection by licensed contractor (minimum) for offsite treatment/disposal
Stormwater	Non-hazardous	Intermittent	None	Discharged as sheet flow from the site
Waste oil including used motor oil, transmission fluid, hydraulic fluid, and antifreeze	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Waste paint, thinners, and solvents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Oily rags	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycled
Oil Absorbents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility

TABLE 3.4-5
SUMMARY OF OPERATIONS WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream.	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Treatment Off-Site
Paper, wood, plastic, cardboard	Non-hazardous	Intermittent	None	Weekly collection for recycling and /or disposal at a Class III Landfill
Empty hazardous material containers	Hazardous	Every 90 days	Store for < 90 days	Recondition or recycle
Used hydraulic fluids, oils, grease, oily filters from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle
Used Air Filters from the CTG	Non-hazardous	Every 5 years	None	Recycle
Spent batteries	Hazardous	Intermittent	Store for < 90 days	Recycle
Spent selective catalytic reduction (SCR) catalyst	Hazardous	Every 25,000 hours of operation	N/A	Recycle
Oily rags from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Hazardous waste disposal facility or recycled
Oily Absorbent from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle or hazardous waste disposal facility
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Continuous	Continuous	Collection by licensed contractor (minimum) for offsite treatment/disposal
CTG periodic operational chemical cleaning	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility (by licensed subcontractors)
RO evaporation pond residue	Non-hazardous	Once every 5 years (assumes 400 hours/year)	NA	Landfill

3.4.11 Management and Disposal of Hazardous Material and Hazardous Waste

The Project will implement a Hazardous Materials Management Program (HMMP) developed for Midway which will include procedures for: hazardous materials handling, use and storage; emergency response; spill control and prevention; employee training; and reporting and record keeping. The

Midway HMMP program is based off plans which have been developed for the nearby CalPeak Panoche plant. The HMMP will be developed and implemented prior to commercial operation. The content will be very similar to the plans for the existing CalPeak Panoche plant adjacent to Midway. The procedures outlined in the HMMP are in accordance with all applicable LORS.

3.4.11.1 Chemical Management

There will be a variety of chemicals stored and used during the construction and operation of Midway. The storage, handling, and use of all chemicals will be conducted in accordance with applicable LORS.

- Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to retain leaks and spills. Secondary containment area design will allow a full-tank-capacity spill. For multiple tanks located within the same area, the capacity of the largest single tank will determine the volume of the area and drain piping. Volatile chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors.

- The aqueous ammonia storage and unloading area will have spill containment and ammonia vapor detection equipment. Aqueous ammonia will be transported and stored in two 12,000-gallon tank onsite, as a 19.5 percent solution, by weight.

- Eyewash stations will be provided in the vicinity of all chemical storage areas.

- Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for small-scale spill cleanup.

3.4.11.2 Hazardous Wastes

Table 3.4-4 Summary of Operation Waste Streams and Management lists the types of wastes to be generated during operation of the project. These wastes will be managed in accordance with applicable LORS and consistent with the implementation of the HMMP developed for Midway, and carried out similarly to that for the existing CalPeak Panoche Peaker plant. Several methods will be used to properly manage and dispose of hazardous wastes generated by Midway.

- Workers will be trained to handle hazardous wastes generated at the site.

- Waste lubricating oil will be recovered and reclaimed by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill.

- Spent SCR and oxidation catalysts will be reclaimed by the supplier or disposed of in accordance with regulatory requirements.

- When applicable, contractors working on site will be responsible for managing and disposing of their generated waste streams.

- The only chemical cleaning wastes are the detergent solutions used during turbine washing. These wastes, which contain primarily dust from the air and potentially compressor blade metals, will be temporarily stored onsite in portable tanks, monitored, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements.

3.4.12 Emissions Control and Monitoring Equipment

CEMS equipment will record NO_x and CO emissions and alert operators of deviations from design levels. The following subsections describe the emissions controls, emissions data, and emissions impacts. Applicable regulations are addressed in the Air Quality Section (5.2) and the Air Quality Technical Report (Appendix I) of this application. Emissions that will be controlled include:

- Oxides of nitrogen (NO_x)
- Carbon monoxide (CO)
- Particulate matter (PM)
- Volatile organic compounds (VOCs)
- Oxides of sulfur (SO_x)

3.4.12.1 NOx Formation

NO_x is a general term pertaining to compounds including nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen. Nitrogen oxides are produced from burning fuels, including gasoline, diesel, and coal under high temperature. In the typical combustion process, temperature distribution is erratic. NO_x production is greatest where the highest temperatures exist. Nitrogen oxides react with volatile organic compounds (VOC) to form ozone in the presence of sunlight.

3.4.12.2 CGT Water Injection for NOx Emission Controls

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O2. The formation of NOx in the combustor is primarily a function of flame temperature. By injecting water into the combustor the flame temperature is reduced thereby limiting the formation of thermal NOx.

3.4.12.3 Post Combustion NOx Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

The SCR process will use 19 percent aqueous ammonia (NH_3) as the reducing agent to activate the catalyst. Diluted ammonia vapor will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction with the catalyst will reduce NO_x to nitrogen and water. Ammonia slip, or the concentration of unreacted ammonia in the exiting exhaust gas, will be limited to 10 ppmvd, referenced to 15% O_2. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors.

The plant will have two (2) SCR systems and an aqueous ammonia system. The main components of the aqueous ammonia system are as follows:

- One (1) Ammonia Unloading Station with an Unloading Pump skid
- Storage Tank(s) (2@12,000 gallon)
- One (1) Ammonia Forwarding Pump skid
- Two (2) Ammonia Injection Control Skids that include:
  - Dilution air fan(s)
  - Electric air heater(s)
  - Ammonia flow control valve(s)
  - Air/ammonia mixing vessel

3.4.12.3.1 Operation

Aqueous ammonia is forwarded from a storage tank to each SCR ammonia injection control skid via the forwarding pump skid. The control skid meters the amount of ammonia to be injected into the SCR based on the CEMS emissions monitoring system and adjusts the ammonia flow control valve as required. The ammonia injection skid is controlled via an independent Programmable Logic Controller (PLC).

Pressurized air is used as the dilution and injection medium to deliver the ammonia from the mixing vessel into the SCR. This air is provided by the dilution air fans and flows through an electronic heater before reaching the mixing vessel. Once the heated dilution air reaches the mixing vessel it combines with the atomized aqueous ammonia and vaporizes the ammonia for injection into the SCR. The ammonia will be atomized into the mixing vessel through the ammonia spray nozzles. The heated air ensures that the ammonia is completely vaporized and does not damage the SCR.

The SCR system will limit NOx emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. Refer to Section 5.2, Air Quality, for information on stack flow rates, temperatures and NOx emission rates over the full range of ambient conditions considered during normal operation (with either one or two CGT's running at base load).

A CEMS monitor will be utilized to monitor NOx levels at the stack exit.

3.4.12.4 CO and VOC Emissions

CO forms when hydrocarbons are burned in an oxygen deficient or low temperature atmosphere. The FT8-3 SwiftPac units will limit CO levels at the exit of each CGT to 26 ppmvd referenced to 15% O_2. The CO oxidation catalyst in the stack will limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2.

VOCs include all unburned hydrocarbons except methane and ethane. They remain in the exhaust when part of the incoming has insufficient contact with oxygen to support full combustion. The FT8-3 SwiftPac

3.4.12.5 Particulates

Particulate PM_{10} and PM_{25} emissions are minimized through selection of natural gas as the exclusive fuel. Combustion of natural gas produces minimal particulate emissions compared to other fuels.

A significant fraction of the particulate matter in stack emissions consists of compounds of ammonium and sulfate. Sulfur compounds, contained in small quantities in natural gas, are oxidized in the gas turbine combustors to form CO_2, H_2O, SO_2, and SO_3. While most of the fuel sulfur is converted to SO_2, approximately 1.5 percent is converted to SO_3, which then combines with water in the exhaust to form H_2SO_4, which is defined as a condensable particulate. Passing through the SCR, some of the ammonia injected for NO_x control combines with H_2SO_4 to form ammonium sulfate and ammonia bisulfate, which form very fine solids which meet the air quality definition of noncondensable PM_{10}. The remaining SO_2 is emitted as a gas.

Inlet air filtration removes particulate matter present in the air, thus preventing it from entering and being exhausted by the turbine.

3.4.12.6 Emission Monitoring

A Continuous Monitoring System (CEMS) will be installed at the stack of both CTG units. The system will sample, analyze and record the concentrations of CO, NOx, O_2, and CO_2 in the flue (stack) gas. The system will provide a record of emissions data and transmit alarm signals to the control room when the emissions levels approach or exceed pre-selected limits. The CEMS will comply with 40 CFR 75 requirements.

3.4.13 Fire Protection and Safety System

The Midway project fire protection and safety systems are designed to limit personnel injury, property loss, and plant downtime caused by a fire or other event. The systems are designed in accordance with:

- Federal, State and Local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- National Fire Protection Association (NFPA) standard practices

The subsections below provide a detailed description of the fire protection and safety systems.

3.4.13.1 Fixed Fire Protection Systems

Each of the Pratt & Whitney Power Systems FT8 model CTG units comes with independent fire protection systems consisting of detection and suppression subsystems that meet the intent of National Fire Protection Association (NFPA) 37, *Standard for Installation and Use of Stationary Combustion Engines and Gas Turbines,* as modified by NFPA 850, NFPA 12, *Carbon Dioxide Extinguishing Systems,* and NFPA 72, *Fire Alarm Code.*

The two (2) CTG enclosures are protected with independent high pressure CO_2 fire suppression systems. The CO_2 tanks, solenoids, and manifolds are located outside each enclosure, with the system's control module located in the unit's Control House. The Generator and the Control House enclosures are protected by portable fire extinguishers that are located at the enclosures.

The CTG Units are also protected by a fire shut-off valve in the fuel line to each engine, outside each CTG enclosure. This valve is wired directly into the CTG unit fire protection panel in the Control House and closes upon a fire trip. It must be reset manually and locally.

There is a CTG unit fire protection system panel that monitors and displays the status of all fire system inputs and provides outputs to activate audible and visual alarms, discharge suppression systems, close fuel fire safety valves, and signal turbine and unit control systems for required responses. The system operates on 24 volts DC and contains its own internal power supply and battery backup. Automatic fire detection is provided by rate compensated thermal detectors in each CTG enclosure. Facilities for manual (electric and mechanical) initiation of the fire systems are also provided. Each control house is monitored by smoke detectors. The CTG fire protection system shall provide automatic notification to a station that is continuously manned.

Immediately upon actuation of a CTG enclosure suppression system, the CTG enclosure secondary air supply fans are de-energized and the gas fuel supply shut off via manually reset fire safety valves located outside the CTG enclosures. A 20-second time delay permits rundown of the gas turbine and generator before a solenoid valve releases the pressurized CO_2 into its distribution manifold. A pneumatic cylinder, actuated by the pressurized CO_2, releases spring loaded dampers to close off the enclosure ventilation air supply. Simultaneously, a series of nozzles floods the CTG enclosures to a 34% CO_2 concentration, sufficient for inverting the combustion process. The CO_2 supply to the manifold is fed from pressurized tanks. The first set of tanks is quick emptying, while the second set of slow-emptying tanks maintains the 5% level required to overcome dilution from air leakage. This CO_2 concentration is maintained for approximately 30 minutes, sufficient time to allow combustibles to cool below their auto ignition temperatures. A CO_2 status display board is provided near each protected CTG enclosure entry to visually indicate the status of the fire protection system (i.e. CO_2 armed or disarmed).

Disarming may be accomplished by disabling the CO_2 suppression system, either electronically by means of a key switch and/or blocking the flow of CO_2 by a manually activated safety block valve in the CO2 piping discharge system. When disarmed the detection alarm system will remain active while the CO2 discharge capability will be disabled. Continuous signals (supervisory) are sent to the monitoring system notifying the operator while the system is disarmed.

Additional safety features include a suppressant release delay and audible and visual alarms inside and outside the CTG enclosures.

Each CTG enclosure is also provided with a resistance type combustible gas detection system. When the gas concentration reaches a 20% lower explosive level (LEL), the gas hazard alarm will be displayed in the CTG unit fire protection panel and warning alarms will be activated at the CTG enclosure. When a 60% LEL level is reached an automatic trip of the fuel and gas turbine will be initiated. The CTG enclosures ventilation system will remain operational to reduce the gas hazard.

3.4.13.2 Fire Alarm and Detection

The main fire control panel will be located in the Midway Control Room and will annunciate activation of a fire protection/detection system by location zones. The alarms will also be monitored in the remote CalPeak Power control room. The panel operates on 120 VAC power through the UPS system. The alarm and detection system is designed to comply with NFPA 70 and 72.

Local building fire pull boxes and audible alarms will be provided. Flashing lights will be used in addition to audible alarms in high noise areas.

3.4.13.3 Portable Extinguishers

Hand held CO2 and dry chemical extinguishers will be located throughout the project area, with size, rating, and spacing in accordance with NFPA 10. Handcart CO2 extinguishers will be provided as needed for specific hazards.

3.4.13.4 Miscellaneous Fire Safety Items

All materials of construction used in the plant will be free of asbestos and will meet the required fire and smoke rating requirements of NFPA 255.

Plant management will coordinate with the local County fire marshal and fire department to provide an appropriate orientation to the project and its operating and emergency procedures for emergency personnel.

3.4.14 Plant Auxiliaries

3.4.14.1 Lighting

Lighting will be required for safe and efficient operation in a number of areas. These include:

- Outdoor equipment platforms and walkways
- Transformer areas

To avoid intrusion on sensitive areas, outdoor lighting will be directed downwards and towards the interior of the plant.

Emergency lighting from DC battery packs will be provided in areas of normal personnel traffic to permit safe egress from the area in case of failure of the normal lighting system. In major control equipment areas and electrical distribution equipment areas, emergency lighting will be sufficient to allow equipment operation and to facilitate reestablishment of auxiliary power.

FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The Midway exhaust stacks are elevated 50 feet above grade. Since the stacks are below the 200 feet limit and there is no airfield in close proximity to the site, the exhaust stacks will not require obstruction lighting.

3.4.14.2 Grounding and Lightning Protection

The electrical system may experience unit ground potential rise due to ground fault, lightning strike, or switching surge. This constitutes a hazard to site personnel and electrical equipment. A ground grid grounding system to permit dissipation of ground fault currents and minimize ground potential rise will be installed. The grounding grid will control step and touch potentials in accordance with IEEE Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

3.4.14.3 Cathodic Protection

Cathodic protection may be provided, using an impressed current or buried anode system to prevent corrosion of buried carbon steel piping and structures. Protective coatings are applied as primary protection and to minimize cathodic protection current requirements. The requirement for a cathodic protection system will be determined during detailed design.

3.4.14.4 Freeze Protection

Midway design incorporates insulation for all pipes less than 2-inches in diameter in order to protect from freezing.

3.4.14.5 Programmable Logic Controller

The programmable logic controller (PLC) provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems. It is described in more detail in Section 3.9 in which facility operations are detailed.

3.4.14.6 Plant Instrument and Service Air System

A compressed air system will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include an air compressor skid with two (2) 100 % capacity oil flooded rotary screw compressors and a dryer skid with twin desiccant type heatless regenerative air vessels.

3.5 CIVIL/STRUCTURAL FEATURES

This section describes the buildings, structures, and other civil/structural features that will constitute the facility as shown on the Site Plan.

3.5.1 Power Block

The Midway project will consist of two power blocks and associated BOP auxiliary equipment. Each power block will consist of one (1) FT8-3 SwiftPac Combustion Turbine Generator unit, SCR, and exhaust stack. Both power blocks will feed one (1) one generator step-up transformer. Corresponding auxiliary mechanical and electrical equipment will be located adjacent to the power blocks. Refer to Figure 3.4-1 for a general arrangement of equipment.

The CTG units will be supported on a reinforced concrete foundation at grade. Individual reinforced concrete pads at grade will be used to support the BOP mechanical and electrical equipment. Foundation pilings will be used for major equipment and building foundations if required. All equipment will have seismic anchoring that meets or exceeds requirements for CBC Seismic Zone 4.

3.5.2 Exhaust Stacks

Each CTG unit will be provided with one self-supporting steel stack. The stack will be 15 feet in diameter and 50 feet tall and will include associated appurtenances, such as sampling ports, exterior ladders and side step platforms.

3.5.3 Buildings

The plant buildings will include two (2) primary control enclosures (one for each SwiftPac unit and one (1) secondary control enclosure. Building dimensions are shown in Table 3.4-1. All of the enclosures will be supported on mat foundations or individual spread footings.

3.5.4 Storage Tanks

The Midway project will utilize two (2) DI Water Storage Tanks (75,000 gallons each) and one (1) Raw Water Storage Tank (75,000 gallons). Each of these three storage tanks will be approximately 23' in diameter and 24' high, and will be supported by a concrete ringwall foundation. The Midway project will also utilize two (2) Aqueous Ammonia Storage Tanks (12,000 gallons each).

3.5.5 Roads

The site will be accessed from West Panoche Road via a new entrance road shown on Figure 3.4-1. The access road network serving the project will consist of a graded gravel entrance road extending for approximately 250 feet to an approximately 1,150-foot asphalt turn-around adjacent to the plant.

3.5.6 Site Security Fencing

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.5.7 Site Grading and Drainage

The plant site will consist of a graded gravel entrance road, parking area, and an asphalt road turn-around adjacent to the plant equipment. Stormwater will continue to run off the site as sheet flow. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of the site. This plan will be utilized at the site to control and minimize stormwater during the construction of the facility. The plan will use best management practices such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas.

3.5.8 Site Flood Issues

According to the Federal Emergency Management Agency (FEMA), the site is within the 100-year flood plain. The site will be raised one foot in conformance with the Fresno County Ordinance Title

15 Flood Hazard Areas to ensure that in the event of a 100-year storm, the site and equipment is not subjected to any flood damage.

3.5.9 Earthwork

Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stockpiled at designated locations using proper erosion protection methods. Any excess material will be removed from the site and disposed of at an acceptable location. If contaminated material is encountered during excavation, its disposal will comply with applicable LORS.

The site is currently a storage yard. If needed, fill will be imported to establish finish grade. Finish grade will be approximately one foot higher than existing grade. The quantity of fill for the project is approximately 9,500 cubic yards all of which will come from the site, as described in the Appendix L.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations for Seismic Zone 4. For slopes requiring soil reinforcement to resist seismic loading, geogrid reinforcement will be used for fills and soil nailing for cuts. Slopes for embankments will be no steeper than 2:1 (horizontal:vertical). Construction will be at one foot above existing grade, which is fairly level; therefore major cuts and fills are not anticipated.

Areas to be backfilled will be prepared by removing unsuitable material and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction. Structural fill supporting foundations, roads, and parking areas will be compacted to at least 95 percent of the maximum dry density as determined by American Society for Testing Materials (ASTM) D-1557 as described in Appendix L, Geotechnical Report. Embankments, dikes, bedding for buried piping, and backfill surrounding structures will be compacted to a minimum of 90 percent of the maximum dry density. Backfill placed in remote and/or unsurfaced areas will be compacted to at least 85 percent of the maximum dry density.

Where fills are to be placed on subgrades sloped at 6:1 (horizontal:vertical) or greater, keys into the existing subgrade may be provided to help withstand horizontal ground accelerations.

The subgrades (original ground), subbases, and base courses of roads will be prepared and compacted in accordance with California Department of Transportation (Caltrans) standards. Testing will be in accordance with ASTM and Caltrans standards.

3.6 ELECTRICAL INTERCONNECTION

The Project will interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line (see Figure 3.6-1). The tie line connecting the existing CalPeak Panoche Plant to PG&E's system is already sized to carry the output of the Midway plant. Midway will construct a 300-foot generator tap line from Midway to the first point of interconnection, the existing CalPeak Panoche Peaker tie line. The transmission line will be located entirely on either the Project site or the PG&E substation property.

3.6.1 Electrical Interconnection Points

The 115 kV transmission line for the existing CalPeak Panoche Plant is a direct intertie between the CalPeak Panoche switchyard and PG&E's Panoche Substation. The existing CalPeak Panoche Generator Tie line which connects the Peaker Plant to the 115 kV switchyard at PG&E's Panoche Substation is the point of interconnection for the project. Although the Midway project will be interconnected to the CalPeak Panoche transmission line, each project will have independent breakers for isolation from the PG&E system. Neither plant will be dependent on the other for its transmission interconnection.

3.6.2 Transmission Line Specifications

The proposed 115kV lines will be overhead conductor design, supported by wooden poles, with a transmission line span of 300 feet. There will be two dead-end take off structures, one existing at the PG&E Panoche substation and the other proposed as part of the Midway project. The line will originate at the main step-up transformer located at the Midway site and terminate at the tap point where it will intersect with the tie-line between the existing CalPeak Panoche Plant and the PG&E Substation.

3.6.2.1 Conductor

The generator tap line connecting the Midway project to the tap point at the CalPeak Peaker site will be constructed using 715.5 kcmil aluminum or equivalent.

3.6.2.2 Ground Wire

The transmission line will have shield or ground wires in place. The location of the shield wires in relation to conductors shall be in accordance with best industry practices and determined by the surrounding terrain. The shield wire shall be extra high strength galvanized steel or copper-clad steel as determined by the location and the detailed design.

3.6.2.3 Route

The proposed transmission line will originate from the Midway generator step-up transformer near the western perimeter of the site north of the CTG Units (Figure 3.4-1). The 115kV transmission line will exit from the northwest edge of the project site and run west approximately 300 feet to tie into the existing CalPeak Panoche tie line to the Panoche Substation. Line design will take into account a 90 degree orientation differential between the Midway dead-end structure and the CalPeak Panoche/PG&E tie-line. Intermediate structures will be installed as required.

3.6.2.4 Tie Line Interconnect

In order to interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line, the Midway project will have to rearrange or rebuild to avoid multiple line crossings for the construction of the Project's tie line. This may be done by raising a segment of the PG&E transmission lines in order to accommodate the Midway generator tie lines. Line clearances over roads and under existing lines will conform to all applicable standards and requirements found in the NESC, ANSI STD C2, for such applications.

3.6.2.5 Transmission Structures

The proposed 115kV transmission lines will be overhead conductor design with a transmission line span of 300 feet. There will be one dead-end take off structure on-site. The structure will be at the originating outdoor switchyard located in the new Midway facility. The design of the transmission structures including lines and poles will be coordinated with PG&E in accordance with their specifications.

3.6.2.6 Types

The take off for the dead end structure will be an A frame type. It will be approximately 50 feet high with additional 15-foot lightning masts. The power conductor, the ground, and the shield wire will be attached in accordance with PG&E specifications.

3.6.2.7 Foundations

Foundations will be required for 115kV disconnect switch, 115kV circuit breaker, voltage and current transformers, and outgoing dead end structure. The foundations will be drilled pier concrete foundations with the necessary anchor bolts. The dead end structure and, if deemed necessary, any intermediate line supports will have foundations designed to meet seismic criteria applicable to the site.

3.6.2.8 Access to Structures

The entire electrical interconnection phase of the project will be located wholly within the property boundaries of either the project, the CalPeak Panoche Plant, or the PG&E substation. It will originate at the facility outdoor switchyard dead end structure and terminate at the CalPeak Panoche tie line to the PG&E substation. The public will not have access to any portions of the transmission lines or the switchyard.

3.6.3 Midway Transmission System Evaluation

PG&E performed a System Impact Study (SIS), March 2006, and a Facility Study, September 2006, under PG&E's Transmission Owner's Tariff for the Midway plant. The System Impact Study determined the impact on the PG&E system based on power flows on the existing transmission lines and transformers, short circuit duties of the existing transmission facilities and stability of the interconnected system considering various contingencies and fault conditions. The Facility Study outlines mitigation measures for transmission facility overloads.

3.6.3.1 Transmission System Reliability Criteria

The North American Electric Reliability Council (NERC) and the Western System Coordinating Council (WSCC) Reliability Criteria for Transmission System Planning, the Independent System Operator (ISO) and the PG&E Reliability Criteria, will be used in the evaluation of the interconnection of this facility to the transmission system. These criteria will also be utilized in the analysis to insure minimum criteria requirements are adhered to and project objectives are met. The ISO processes will be monitored throughout the transmission system evaluation to insure that any changes to the criteria are considered.

3.7 PIPELINES

The project includes both a natural gas supply pipeline and a water supply pipeline. The natural gas line would tap into an existing PG&E trunkline and would consist of a 6-inch line, approximately 50 feet of which would be off-site and approximately 600 feet on-site. The PG&E trunkline tie in is adjacent to the entrance of the property. The underground water pipeline would consist of approximately 1,200 feet of 3-inch line piped from the CalPeak Panoche site.

3.7.1 Natural Gas Supply Line

Natural gas will be delivered to the plant site from a connection to a PG&E trunk line. A metering and regulator station will be provided on the PG&E right of way northwest of the site. The gas will be metered by PG&E as it enters the project site. Additional flow metering will be provided at each CTG.

3.7.1.1 Pipeline Routes

PG&E will tap the 6-inch gas service line serving the existing CalPeak Panoche Peaker facility approximately 25 feet upstream of the existing meter set, and install 50 feet of 6-inch steel pipeline to a new 6-inch turbine meter set adjacent to CalPeak Power's existing meter set. See Figure 3.4-1 for the location of the meter sets. From the newly installed meter set, approximately 600 feet of gas line would be constructed along the western perimeter of the project site.

3.7.1.2 Buried Pipe

Construction will primarily use an open trench method.

The pipeline will be constructed of carbon steel in accordance with the American Petroleum Institute (API) specifications for gas pipelines or specifications of the ASTM. The pipe will have corrosion-protection coating that is either factory- or field-applied. Joints will be welded, inspected using x-ray, and wrapped with a corrosion-protection coating.

Construction of the natural gas pipeline is described in the following subsections.

3.7.1.2.1 Trenching

The width of the trench is dependent on the soil type encountered and requirements of governing agencies. The optimal dimensions of the trench will be about 18 inches wide and 48 inches deep. For loose soil, a trench of up to 8 feet wide at the top and 2 feet wide at the bottom may be required. The pipeline will be buried with a minimum 36-inch cover. The excavated soil will be piled on one side of the trench and later used for backfilling after the pipe is installed in the trench.

3.7.1.2.2 Stringing

The pipe will be laid out (stringing) on wooden skids along the side of the open trench during installation.

3.7.1.2.3 Installation

Installation consists of:

- Welding, coating, and bending of pipe
- Laying sand or fine soil on the trench floor
- Lowering the pipe string into the trench

Welding will meet the applicable API and ASTM standards and shall be performed by qualified welders. Welds will undergo radio graphical inspection by an independent, qualified radiography contractor. All coatings will be checked for holidays and will be repaired before lowering the pipe into the trench.

3.7.1.2.4 Backfilling

Backfilling consists of returning excavated soil back into the trench around and on top of the pipe, and up to the original grade of the surface. The backfill will be compacted to protect the stability of the pipe and minimize subsequent subsidence.

3.7.1.2.5 Plating

Plating consists of covering any open trenches, for safety purposes, with solid rectangular plates in areas of foot or vehicular traffic at the end of a workday. Plywood plates can be used in areas of foot traffic and steel plates on areas of vehicular traffic.

3.7.1.2.6 Pneumatic Testing

Pneumatic testing consists of plugging both open ends of a pipeline that is to be tested, filling the pipe with air up to a pressure specified by code requirements, and maintaining the pressure for a period of time.

3.7.1.2.7 Clean up

Clean up consists of restoring the ground surface by removing construction debris, grading the surface to its original state, and replanting vegetation.

3.7.1.2.8 Commissioning

Commissioning consists of cleaning and drying the interior of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

3.7.1.2.9 Safety

Safety consists of complying with all applicable CalOSHA, OSHA, and other regulations and standards as well as contractor's specific safety plans for the project, which will address specific pipeline safety issues.

3.7.2 Water Supply Line

Water can supplied to the project from multiple sources but for purposes of this report and data presented we will assume water will be delivered to the plant site from a connection to the existing CalPeak Panoche Peaker Plant well.

3.7.2.1 Pipeline Routes

The water pipeline tying Midway to the existing CalPeak Panoche well would follow the perimeter of the CalPeak Panoche site before turning northwest along the shared property line between Midway and CalPeak Panoche. At the point where the water pipe reaches the north side of the Midway CTG units, prior to the Midway step-up transformer, the line would travel east and north into the Midway Site where it would then tap into the RO unit.

3.7.2.2 Buried Pipe

Construction of the water pipeline, similar to the natural gas line, will use the open trench method. See sections 3.7.1.2.1 thru 3.7.1.2.9 above.

3.8 PROJECT CONSTRUCTION

Construction of the Midway project includes site preparation, foundation construction, erection of major equipment and structures, installation of piping, electrical systems, control systems, and start-up/testing. These construction activities are expected to require approximately 10 months. The schedule commences when the Owner issues a notice to proceed and is completed when the project is commercially operational.

Table 3.8-1 presents the major construction milestones.

TABLE 3.8-1
CONSTRUCION MILESTONES

Activity	Dates
Procure Financing	December 2007 to February 2008
Engineering, Design, Procurement	February to June 2008
Construction	June 2008 to March 2009
Performance Testing	March to May 2009

Per the Power Purchase Agreement and EPC contract, the plant is to be in commercial service by May 1, 2009. Engineering, design, and procurement will commence February 2008 and will be completed by June 2008. Construction is scheduled to occur over a 10 month period after the notice to proceed is received. Construction will be completed by March 2009. Performance testing will be conducted between the end of construction and May 1, 2009 when commercial operation will begin.

3.8.1 Project Schedule and Workforce

The detailed work plans, logistical studies, project procedures, schedules and administrative control systems developed to perform, monitor, and control the Midway project and its implementation will all be prepared in accordance with the CEC regulations and applicable LORS.

The general sequence of work will proceed as follows:

- Receipt of the Final Decision from the CEC
- Close project financing

- Issuance of a notice to proceed by the Owner to the contractor
- Development of the project schedule incorporating items required by the CEC
- Commencement of engineering and procurement activities
- Site preparation and construction mobilization
- Installation of underground piping and electrical systems
- Construction of concrete foundations
- Installation of power-generating equipment
- Installation, interconnection, and testing of aboveground piping and electrical systems
- Installation, interconnection, and testing of instrumentation and control devices and distributed control system

Construction will conclude with start-up and testing activities, which will continue until the entire facility is capable of reliable operation within permit requirements and good operating practice. All of the systems and subsystems in each unit will be tested and adjusted, first individually and then combined with others, before the project is deemed ready for startup.

The Midway project will be declared commercially operational after successful completion of plant start-up activities, and after appropriate testing has been completed. Facility optimization activities may continue after commencement of commercial operation.

Attachments A and B present the projected manpower required for construction. Required manpower averages approximately 75 people per month – for a total required 743 man-months during the 10 month construction period. Monthly required manpower peaks at 110 people. Attachment B specifically illustrates the manpower breakdown by craft.

3.8.2 Execution Plans – Engineering and Construction Phases

3.8.2.1 Engineering and Pre-Construction Mobilization

Engineering activities will begin following the California Energy Commission (CEC) Final Approval of the project, which is anticipated by December 2007. Staff from the engineering and construction groups will work together in the same office to prepare a safe, qualitative, cost effective, and sequentially effective plan for the project. The initial focus will include the purchase and delivery of engineered equipment and specialty, long-lead material. Facility design will include early milestones to complete the civil, structural, and mechanical equipment aspects of the project. As the ground breaking occurs and site grading commences, the design and procurement continues to support the overall schedule and reliability of the final project. Contractor is anticipated to mobilize within four months after notice to proceed.

3.8.2.2 Construction Facilities

Mobile trailers or similar suitable facilities (e.g., modular offices) will be used as construction offices for owner, contractor, and subcontractor personnel.

3.8.2.3 Construction Parking

Construction parking will be within existing site boundaries. Construction access will be from West Panoche Road, via the access road. There will be adequate parking space for construction personnel and visitors during construction on site.

3.8.2.4 Laydown and Storage

As part of the site access road construction previously described, an adjacent gravel laydown area will also be constructed (see Figure 3.4-1). In addition to the laydown area, other areas within the site boundary may also be used as off-load and staging during construction. All laydown and storage areas are wholly within the site perimeter and once construction is complete will be within site security perimeter fencing. Post-construction, the gravel laydown area will be used for parking as needed.

3.8.2.5 Emergency Facilities

The General Contractor will have a Safety Coordinator who will prepare a site-specific safety plan. Emergency services will be coordinated with the County of Fresno Fire Department and local hospital in the City of Mendota. An urgent care facility will be contacted to set up non-emergency physician referrals. First aid kits will be provided in the construction offices and regularly maintained. At least one person trained in first aid will be part of the construction crew. In addition, all foremen and supervisors will be given first aid training.

3.8.2.6 Construction Facilities

During construction, temporary utilities will be provided for the construction offices, laydown area, and the project site.

Temporary construction power will initially be provided by using diesel- and gas-powered generators. Eventually, temporary con

Water trucks and potable water delivery will initially provide construction water. As the project matures and the build-out of water wells is completed, the onsite water wells will then be used as the source of construction water.

Portable toilets will be provided throughout the site during construction.

3.8.2.7 Site Services

The General Contractor will provide the following site services:

- Environmental health and safety training
- Site security
- Site first aid
- Construction testing (e.g., nondestructive examination, soil compaction)
- Site fire protection and extinguisher maintenance
- Furnishing and servicing of sanitary facilities
- Trash collection and disposal
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations

3.8.2.8 Construction Equipment and Materials Delivery

Materials and supplies will be delivered to the site by truck. Truck deliveries of construction materials and equipment will generally occur on weekdays between 6:00 a.m. and 6:00 p.m., however, some larger heavy load deliveries may be delivered outside those hours. Site access will be controlled for personnel and vehicles.

3.9 FACILITY OPERATIONS AND MAINTENANCE

This section discusses operation and maintenance procedures that will be followed by the Midway staff to ensure safe, reliable, and environmentally acceptable operation of the power plant, transmission system, and pipelines. Additional information will be provided in the attached appendices.

3.9.1 Introduction

Midway will require approximately 2 full time employees. Plant operations will be directed from an existing and remote control room located in San Diego, California. All system equipment will be controlled through PLC's utilizing control integration software and the project controls will be integrated into this proven control system.

3.9.2 Power Plant Facility

The Midway plant is designed as a simple cycle peaking facility with two Swiftpac units. Each unit consists of two FT8-3 Gas Turbines with power turbines and a single generator. The project will be designed to emphasize efficiency and flexibility.

3.9.2.1 Peaker Plant Operation

The plant will be operated to provide its maximum available electrical output during the periods when the demand for electricity is greatest. As a peaking facility, the plant is contracted and will acquire all permits to operate a maximum of 4,000 hours per year. Midway expects actual operations under normal conditions to be substantially less than contracted hours. Plants with similar operation parameters in California typically operate less that 400 hours annually. The plant will be dispatched by PG&E in accordance with their economic dispatch procedures. The project equipment will be integrated with a CalPeak Power plant performance monitoring program that allows plant staff to make critical decisions as to when the equipment performance has deteriorated to the extent requiring corrective action. This program also allows the plant staff to accurately determine the cost of electrical production. This ability in conjunction with an experienced and adaptable staff will allow the plant to be operated and maintained in the most efficient method possible.

Planned maintenance will be coordinated to coincide with periods of low power demand on the California Independent System Operator (CAISO) system.

3.9.2.1.1 Annual Operating Practices

Generally, the plant will be operated to provide its maximum availability when the demand for electricity is highest. Planned maintenance will be coordinated with demand fluctuations so that outages occur during periods of low demand. Normally, this work will be planned during non-peak periods when electrical demand is low and must be approved by PG&E and the California Independent System Operator

3.9.2.1.2 Operation with Seasonal Variation in Ambient Temperature

Unit output is sensitive to the temperature and density of the ambient air taken into the CTG inlet and used in the combustion process. The temperature and humidity of the air ingested into the gas turbine inlets affect power output. The gas turbine will be equipped with evaporative coolers that will be operated when needed to enhance the power output of the gas turbines. Evaporative coolers will also reduce the inlet air temperatures whenever the ambient temperature is higher than 60°F.

3.9.2.1.3 Startup and Shutdown

The typical time required for startup is approximately 10 minutes. The PG&E contract allows for a maximum of 365 startups and shutdowns per unit in a one-year period. Plants with similar operating parameters in California typically have less than 50 startups and shutdowns annually.

3.9.2.2 Control Philosophy

The control system will consist of a state-of-the-art, integrated, microprocessor-based PLC using control integration software. The control system will provide for startup, shutdown, and control of plant operation limits and will provide protection for the equipment.

- Interlock and logic systems will be provided via hard-wired relays, and/or PLCs.
- Process switches (i.e., pressure, temperature, level, flow) used for protective functions will be connected directly to the PLC and the protective system.

3.9.2.3 Degree of Automation

The plant will be designed with automation where practical in order to reduce the required actions performed by operating personnel. Through subsystem automation and use of the PLC, the number of individual control switches and indicators that confront the operator will be greatly reduced. This will reduce the complexity and size of the main control room workstations and panels.

3.9.2.4 Centralized Control

The majority of the equipment that is required to support the operation of the plant will be located in the control and electrical equipment rooms. The control room contains the PLC CRT-based operator workstations and the auxiliary control panels. In addition, the control room contains the alarm, utility, and log printers.

Local control panels or stations will be furnished only where operator attention is required to set up a system for operation, or where the equipment requires intermittent attention during plant operation. Main control room indicators and control functions will only be duplicated for those variables critical to plant availability.

All of the control processes furnished on the local control panels and central control system will be mirrored in the San Diego operations control center. The plant will have the capability of being operated locally or from the remote location in San Diego. The remote operation will be transferred to the San Diego control center via T-1 line and internet service and will have redundant systems provided by a telephone dial up connection.

3.9.3 Transmission System Operation and Maintenance

Midway will be responsible for the maintenance, inspection, and normal operation of the new 300-foot 115kV interconnecting transmission line in agreement with PG&E and ISO protocols. Operation of the electrical interconnection facilities will be locally controlled at the new generating plant. Control and protection equipment at the plant and within the PG&E switchyard will monitor and control the safe operation of the line, and will automatically trip the plant (or a portion of it) and/or the line in the event of a fault. Midway will have continuous access to all of the electrical interconnection facilities in the event of an emergency.

The control, protection, and metering equipment for the interconnection will be tested for proper operation. The protection and metering equipment will be calibrated and tested approximately every 12 months in accordance with the Midway and PG&E procedures. Inspections of the transmission line and structures are anticipated to occur every 6 to 12 months. Periodic cleaning of the transmission line and switchyard insulators and bushings may be required to remove contamination. The cleaning will be performed based on visual inspections scheduled by plant and switchyard operating personnel. Washing operations will consist of spraying insulators with deionized water through high-pressure equipment mounted on a truck.

3.9.4 Pipelines

PG&E will own the natural gas pipeline from PG&E Gas Line 2 through the outlet of the project meter run. Maintenance of this fuel gas supply line will be performed by PG&E in accordance with applicable Federal Energy Regulatory Commission (FERC) and U.S. Department of Transportation (DOT) regulations. This piping system will receive periodic inspections as part of PG&E's pipeline maintenance program.

The water line will be owned by Starwood Power-Midway, LLC. The system will receive periodic inspections as part of Midway's maintenance program.

3.10 SAFETY, AVAILABILITY, AND RELIABILITY

3.10.1 Safety Precautions and Emergency Systems

Safety precautions and emergency systems will be implemented as part of the design and construction of the plant to ensure safe and reliable operation of project facilities. Administrative controls will include classroom and hands-on training in operating and maintenance procedures and general safety items, and a well-planned maintenance program. These will work with the system design and monitoring features to enhance safety and reliability.

Safety, auxiliary, and emergency systems will consist of lighting, grounding, DC backup for controls, fire and hazardous materials safety systems, security systems, and natural gas, steam, and chemical safety systems. The plant will include its own utilities and services such as plant and instrument air and fire suppression.

3.10.1.1 Safety Precautions

3.10.1.1.1 Worker Safety

Midway will implement programs to assure that compliance with federal and state occupational safety and health program requirements is maintained. In addition to compliance with these programs, Midway will identify and implement plant specific programs that effectively assess potential hazards and mitigate them on a routine basis.

3.10.1.1.2 Hazardous Material Handling

Hazardous materials will be stored and used at Midway during both construction and operation. Design and construction of hazardous materials storage and dispensing systems will be in accordance with applicable codes, regulations, and standards. Hazardous materials storage areas will be curbed or diked to contain spills or leaks.

Potential hazards that are associated with hazardous materials will be further mitigated by implementing a hazards communication (HAZCOM) program. This program involves thorough training of employees on proper identification, handling, and emergency response to spills or accidental releases.

Emergency eyewashes and showers will be provided at appropriate locations. Appropriate Personal Protective Equipment (PPE) will be provided during both construction and operation of the facility.

3.10.1.1.2.1 Aqueous Ammonia System

Midway will minimize the potential for an occurrence of an accidental release of aqueous ammonia at the facility. Ammonia system design features will include containment berms, drainage of the unloading area into the containment area below the storage tank, emergency shutdown procedures, ammonia sensors, alarms, training, emergency response plans, and other appropriate safety procedures that will ensure safe operation of the aqueous ammonia system. Midway's Operations Manager will have overall responsibility for administering the Risk Management Plan (RMP), which will be requested under the California Accidental Release Prevention Program (CalARP). The important safety features implemented by CalPeak Power are discussed in this RMP document. These key features of the ammonia system at the Facility will include:

- Proactive facility inspection and maintenance program that will be administered by the Midway Operations Manager, and is designed to identify potential hazards before a release occurs.

- A below-grade containment area sized to contain the entire contents of one of the storage tanks (12,000 gallons) plus 10% overage, plus the maximum rainfall in 24 hours for the entire period of record.

- An unloading area that is sloped to the containment area so that any spills occurring during unloading operations will be fully contained.
- System design incorporating the latest building codes designed for Seismic Zone 4.
- Automatically actuated safety valves throughout the system.
- Pressure relief valves that vent back to the storage tank.
- An emergency shut-off valve located on the aqueous ammonia truck that can be activated by the delivery truck operator.
- Comprehensive training of employees, Facility operators, and contractors.
- Written standard operating procedures.

The facility will be operated in a manner that will protect all employees, contractors, and the public from exposure to hazardous chemicals. The facility will be designed to assure safety and minimize the potential for ammonia releases. The system will have several features (control systems, pressure gauges, flow control indicators, level indicators, alarms, etc.) that will assure that the system will operate safely. In addition, Midway will install ammonia sensors that will provide operators with an indication of a release at the site. Any release that triggers the high alarm on the sensors will trigger emergency response procedures. Midway will implement policies and procedures that will assure proper operation and safety of the aqueous ammonia system.

3.10.1.1.2.2 System Safety Features

Midway has included both passive and active mitigation features in the aqueous ammonia system design. Passive controls such as connected fill and vent lines will be in place to minimize potential vent leakage paths and ammonia releases without the assistance of automatic shutdown, or human intervention. Passive controls at the site will include a below-grade containment area surrounding the 12,000-gallon aqueous ammonia tank that will be capable of containing 110% capacity of the tank plus rainfall. In addition, the truck unloading pad will be sloped toward the below-grade containment area so that any spills of aqueous ammonia that occur during unloading operations will be directed to the containment area. A berm will also be installed around the vaporizer skid to contain any aqueous ammonia releases that occur in that area.

Several active mitigation elements are incorporated into the aqueous ammonia system design. The Facility will be operated and controlled remotely at a site located in San Diego. The Midway Operations Manager will be responsible for administering the RMP. Operators will be present at the remote control room at all times, and will continually monitor the aqueous ammonia system. The site itself will be equipped with ammonia sensors and the control system will be designed such that the aqueous ammonia system will automatically shut down in the event of a detection of aqueous ammonia above the sensors' set points. A Midway operator will be present at the site during aqueous ammonia unloading for added safety.

3.10.1.1.2.3 Process Safety Equipment

The aqueous ammonia system is designed so that each part of the system can be isolated in the event of an accident or other event. System valves are generally designed to fail closed so that the systems are isolated. This will minimize the amount of a release in the event of an accident at the facility involving the aqueous ammonia system.

The process equipment associated with the aqueous ammonia system is part of the facility's SCR emissions control system for NOx. NOx emissions are monitored at the control room to ensure proper system operation. High NOx emissions will trigger an alarm resulting in a personnel investigation to determine the cause. The remote operations center will also monitor the aqueous ammonia level in the tank. As described above, the Facility will be equipped with ammonia sensors that will alarm in the event of an ammonia release. The ammonia sensors will trigger an automatic shutdown of the ammonia system, isolating the various components of the aqueous ammonia system. Operating the Facility during an ammonia release would not exacerbate the effects of the release or present any additional hazard. Depending on the amount of release or due to potential emissions increases, the Facility may ultimately have to be shut down, but this would remain at the discretion of the operator.

Table 3.11-1 presents a summary of the devices that will be monitored by the operator and would indicate occurrence of a leak.

TABLE 3.11-1
SUMMARY OF MONITORED DEVICES

Device	Manufacturer	Detection Capabilities	Event(s) Triggering an Alarm
Ammonia Tank Level Indicator	Rochester float indicator Model A6342-12-144 with R6315-23 level transmitter	Output: 4-20 mA Conformity: $\pm$ 1.5%	Operator monitors ammonia tank level visually. Should the operator observe a rapid drop in level, or should the high level alarm be triggered, the operator will evaluate the event and shut down the ammonia system as necessary.
Ammonia Sensors (2)	Scott Bacharach, Model 4600 GasPlus	0 to 50, 150, 250, 500 ppm, with 1 to 100 ppm as an optional range value Sensor repeatability: $\pm$ 2% full scale Sensor linearity: $\pm$ 2% full scale Sensor life: 22-24 months average	Detection of a concentration of 50 ppm NH3

3.10.1.1.3 Security

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.10.1.1.4 Public Health and Safety

The programs implemented to protect worker health and safety will also benefit public health and safety. Facility design will include controls and monitoring systems to minimize the potential for upset conditions that could result in public exposure to acutely hazardous materials. Potential public health impacts associated with operation of the project will be mitigated by development and implementation of an Emergency Response Plan (ERP), a HAZCOM Program, a Spill Prevention, Control, and Countermeasures (SPCC) Plan, safety programs, and employee training.

Midway will coordinate with local emergency responders, provide them with copies of the plant site ERP, conduct plant site tours to point out the location of hazardous materials and safety equipment, and encourage these providers to participate in annual emergency response drills.

3.10.1.2 Emergency Systems

3.10.1.2.1 Fire Protection Systems

Midway will have onsite fire protection systems and will be supported by local fire protection services. Section 3.4.11 includes a detailed description of the fire protection systems.

Portable and fixed fire suppression equipment and systems will be included in the project. Portable fire extinguishers will be located at strategic locations throughout the project site. The fixed fire protection system will also include a carbon dioxide fire suppression system.

Employees will be given fire safety training including instruction in fire prevention, the use of portable fire extinguishers and hose stations, and reporting fires to the local fire department. Employees will only suppress fires in their incipient stage. Fire drills will be conducted at least twice each year for each work area.

The Fresno County Fire Protection Division (FCFPD) Station #96, located at 101 McCabe, Mendota, with an estimated response time of 15-20 minutes, will provide primary fire protection, fire fighting, and emergency response services to the Midway site. The County Fire Marshall will perform a final fire safety inspection upon completion of construction and, thereafter, will conduct periodic fire safety inspections. Prior to startup the FCFPD will be requested to visit the project site to become familiar with the site and with project emergency response procedures.

3.10.1.2.2 Medical Services and Emergency Response

Midway will have an Emergency Response Plan (ERP). The ERP will address potential emergencies, including chemical releases, fires, and injuries, and will describe emergency response equipment and its location, evacuation routes, procedures for reporting to local emergency response agencies, responsibilities for emergency response, and other actions to be taken in the event of an emergency.

Employee response to an emergency will be limited to an immediate response to minimize the risk of escalation of the accident or injury. Employees will be trained to respond to fires, spills, earthquakes, and injuries. A first-aid facility with adequate first-aid supplies and personnel qualified in first-aid treatment will be onsite.

3.10.2 Aviation Safety – Power Generation Stacks

The FAA Regulations Part 77 establishes standards for determining obstructions in navigation space and sets forth requirements for notification of proposed construction. These regulations require notification of any construction over 200 feet in height above ground level. The closest airfield with regularly scheduled commercial flights is Fresno, approximately 50 miles away. A small general aviation airport in Firebaugh (Firebaugh Airport) is also located approximately 24 miles from the site.

The stacks will be 50 feet above ground. A Notice of Construction or Alteration will not be required to be filed with the FAA. Local air uses, such as crop dusting operations, will be reviewed to determine the need for other aviation safety markings.

3.10.3 Transmission Line Safety and Nuisance

3.10.3.1 Transmission Line Description

The onsite interconnection facilities will consist of 115kV outdoor switchyard, line surge arresters, high voltage disconnect switches, high voltage circuit breakers, metering and relaying devices, foundations, ground grid, fencing, and all other components necessary to connect the output of the generators to the existing CalPeak Panoche tie-line. The transmission line will be approximately 300 feet long.

3.10.4 Facility Availability

This facility consists of four simple cycle gas turbines (two per SwiftPac Unit) and two generators that are specifically designed for peaking services. To support dispatch service, each turbine generator is commonly operated at 100 percent of base load, hence the facility will be operated to support dispatch service control in response to system demands for electricity.

The facility will be designed for an operating life of 30 years. Reliability and availability projections are based on this operating life. Operations and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of the plant components.

The percent of time that the power plant is projected to be operated is defined as the "service factor." The service factor considers the amount of time that a unit is operating and generating power, whether at full or partial load. Midway will be licensed to operate up to 4,000 hours per year, as required by PG&E. This differs from the equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable.

The EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected EAF for Midway is estimated to be approximately 95 to 99 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the "availability of a unit," which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

3.10.5 Equipment Reliability and Redundancy

Control systems and auxiliary equipment serving the power generating and transmission equipment will be selected for high reliability, where possible. Redundant equipment and systems will be installed to allow the plant to continue operating in the case of an auxiliary equipment failure where cost effective or necessary for safety. Section 3.4.2 and Table 3.4-1 of this application list the plant's main generating components and major auxiliary equipment.

Reliability will be further ensured through a regular inspection and maintenance program. Outages will normally occur during times when regional electric demand is low and surplus generating capacity is readily available.

To further enhance reliability, the project will participate in the manufactures leased engine program. The gas turbine engines are readily interchangeable, within 72 hours a new engine can be installed to replace one that has failed. An outage caused by an engine failure will be remedied within 72 hours through the use of a lease engine.

Gas turbine inspections and overhauls will dictate the length and frequency of major scheduled outages. Under expected operating conditions, the gas turbine combustors and hot sections will require a scheduled outage during the off-peak period. Depending on the length of the outage a lease engine may be installed while the Midway engine is under repair. . As dictated by operating hours, major gas turbine overhauls will require scheduled outages. Major hot section overhauls will be required at about 25,000 equivalent fired hours and major overhauls of the complete turbine and compressor will be required at about 50,000 hours.

3.10.5.1 Personnel and Administration

Along with the plant hardware, plant administrative and operational procedures will be designed to enhance reliability. Plant operations and maintenance activities will be carried out in accordance with documented procedures and by personnel trained in accordance with a documented training program. To ensure operational efficiency, selected spare parts for plant equipment and machinery will be maintained onsite. The training program will include classroom and hands-on training. Plant operations and maintenance personnel will also participate in the commissioning, startup and test activities during the plant construction period.

3.10.5.2 Combustion Turbine

The power block consists of four separate combustion turbines and two generators operating in the simple-cycle mode. Each combustion turbine generator can provide 25 percent of the total plant output and operate independent of its opposing combustion turbines.

3.10.5.3 Control and Information System

Critical functions will have redundant sensors and controls. The control systems will be designed with a redundancy level such that critical controls and indications do not fail due to a single component failure.

Control systems in general, and especially the equipment protection systems, will be designed according to stringent reliability criteria.

Plant operation will be controlled from either a locally installed operator panel or a control room off-site in San Diego, California.

3.10.5.4 RO and Demineralized Water Systems

The RO and demineralized water systems will provide high-purity water to be used for NOx control and inlet fogging. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been processed through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required demineralized water. Demineralized water will be stored in two 75,000 gallon demineralized water storage tanks

3.10.6 Power Plant Performance Efficiency

CTG output and efficiency are greatly affected by atmospheric conditions and load variations. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. Air-cooled fin-fan heat exchangers are used to maintain stack temperature at less than 750°F.

3.10.7 Fuel/Water Availability

3.10.7.1 Gas Supply

The Midway site will be fueled by natural gas supplied from PG&E's trunk line system immediately to the north of the property. The gas interconnection would be require approximately 650 feet of new line at the Midway site in order to tap into the existing PG&E system. The proposed pipeline would have sufficient capacity to supply each FT8-3 SwiftPac CTG unit with approximately 625MMBtu/hr at a pressure of 500-600 psig.

3.10.7.2 Water Availability

The water will come from the adjacent and existing CalPeak Panoche Plant well (upper groundwater aquifer). The proposed annual water use of approximately 13.6 acre-feet per year will not exceed the safe perennial yield of groundwater in the Westside Sub-basin of the San Joaquin Valley Groundwater Basins.

3.10.8 Project Quality and Control

The general contractor, the design-engineer contractor, and all significant vendors, suppliers, and subcontractors for the project will be required to develop a project-specific quality program prior to beginning work. Each program will define quality goals, processes to measure events, and incentive programs. Quality standards will include safety and environmental compliance objectives.

3.10.8.1 Quality Assurance

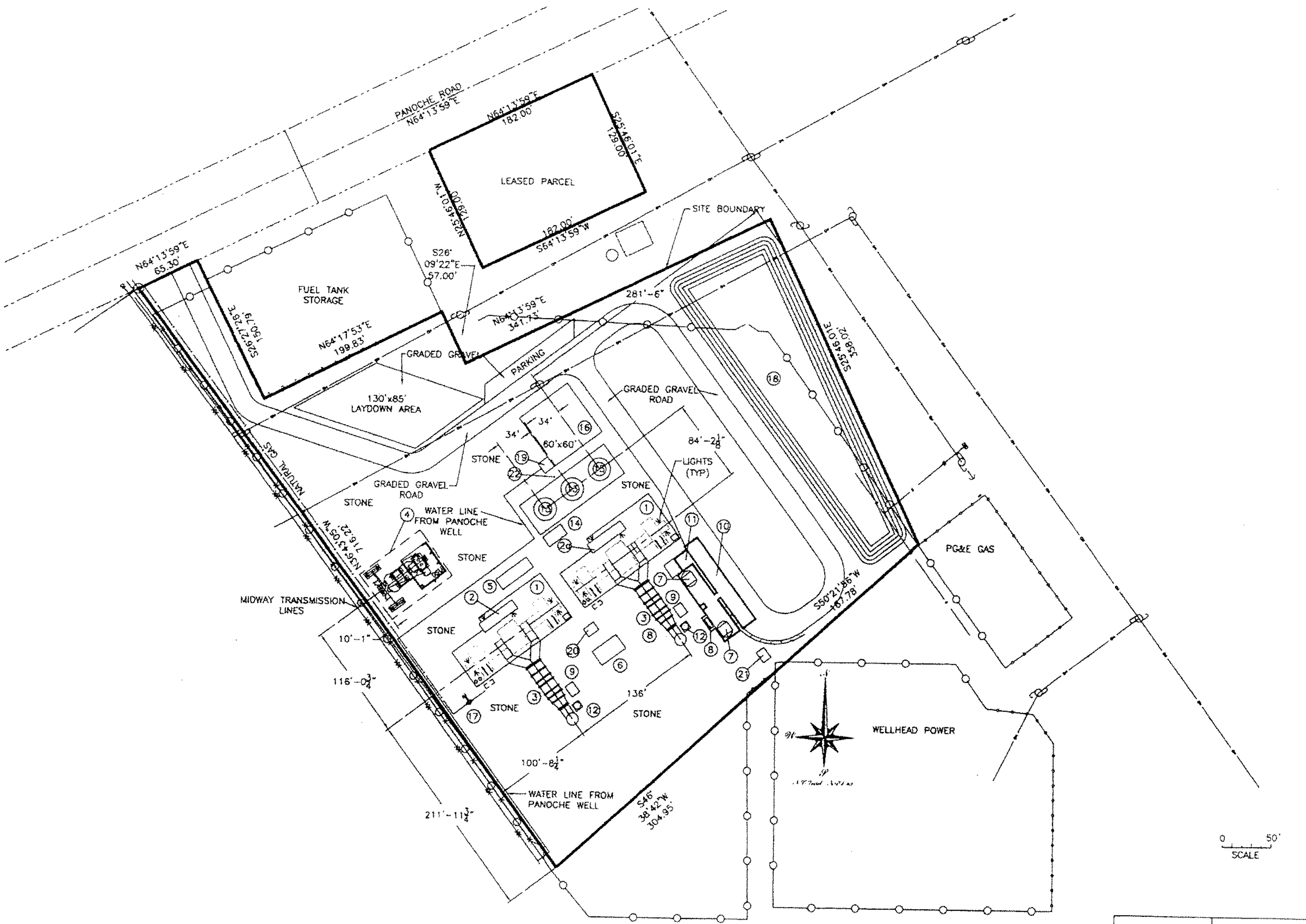
The quality assurance manual will define the quality management system and processes, management responsibility and organization, project execution, and measurement methods. Other elements of the quality assurance program will include a procedure manual, standards, job quality analysis, quality tours, preventive action planning, internal and external assessment, training, and trending.

Key quality indicators will be tracked and include surveillance, deficiencies, non-conformances, weld reject rate, audit results, quality incidents, and rework. The quality indicators will be metrically measured and reported.

3.10.8.2 Quality Control Records

Quality records will be maintained during the detailed design phase of the project, during the construction phase and during plant commissioning. Quality records include written documentation that procedures and standards are followed including inspection and testing reports, audit checklists, audit reports, and quality incident investigation reports.

REV	DATE	DESCRIPTION	BY	APP
A	22AUG06	INITIAL ISSUE	RAR	DAT



ITEM	DESCRIPTION	QTY
1	FT8-3 GAS TURBINE GENERATOR UNIT	2
2	PRIMARY CONTROL ENCLOSURE 1	1
2a	PRIMARY CONTROL ENCLOSURE 2	1
3	CO/SCR CATALYST	2
4	SWITCH YARD/ MAIN STEP-UP TRANSFORMER/ DEAD END STRUCTURE (13.8x115 kV)	1
5	SECONDARY CONTROL ENCLOSURE	1
6	AIR COMPRESSOR/DRYER SKIDS	2
7	AQUEOUS AMMONIA TANK & CONTAINMENT AREA	1
8	AQUEOUS AMMONIA FORWARDING PUMP SKID	1
9	AQUEOUS AMMONOA INJECTION CONTROL SKID	2
10	AQUEOUS AMMONIA UNLOADING AREA	1
11	WASH DOWN DRAIN TANK AREA	1
12	CEMS ENCLOSURE	2
13	DEMINERALIZED WATER TANK (75,000 GALLON)	2
14	DEMINERALIZED WATER PUMP SKID	1
15	RAW WATER TANK (75,000 GALLON)	1
16	DI TRAILER PAD	1
17	GAS FUEL SCRUBBER	1
18	RO/EVAPORATION POND	1
19	RO UNIT	1
20	WASTE WATER SYSTEM COLLECTION SUMP	1
21	WASTE WATER SYSTEM ABOVE GROUND STORAGE TANK (4,700 GALLONS)	1
22	LIGHT POLE	1

NOTES:
1. TANK DIMENSIONS= 23' DIAMETER x 24' HIGH

Starwood Power
Midway LLC

ENERGY SERVICES INC.

SCALE 1=50
DATE 22AUG06
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PRELIMINARY PLAN

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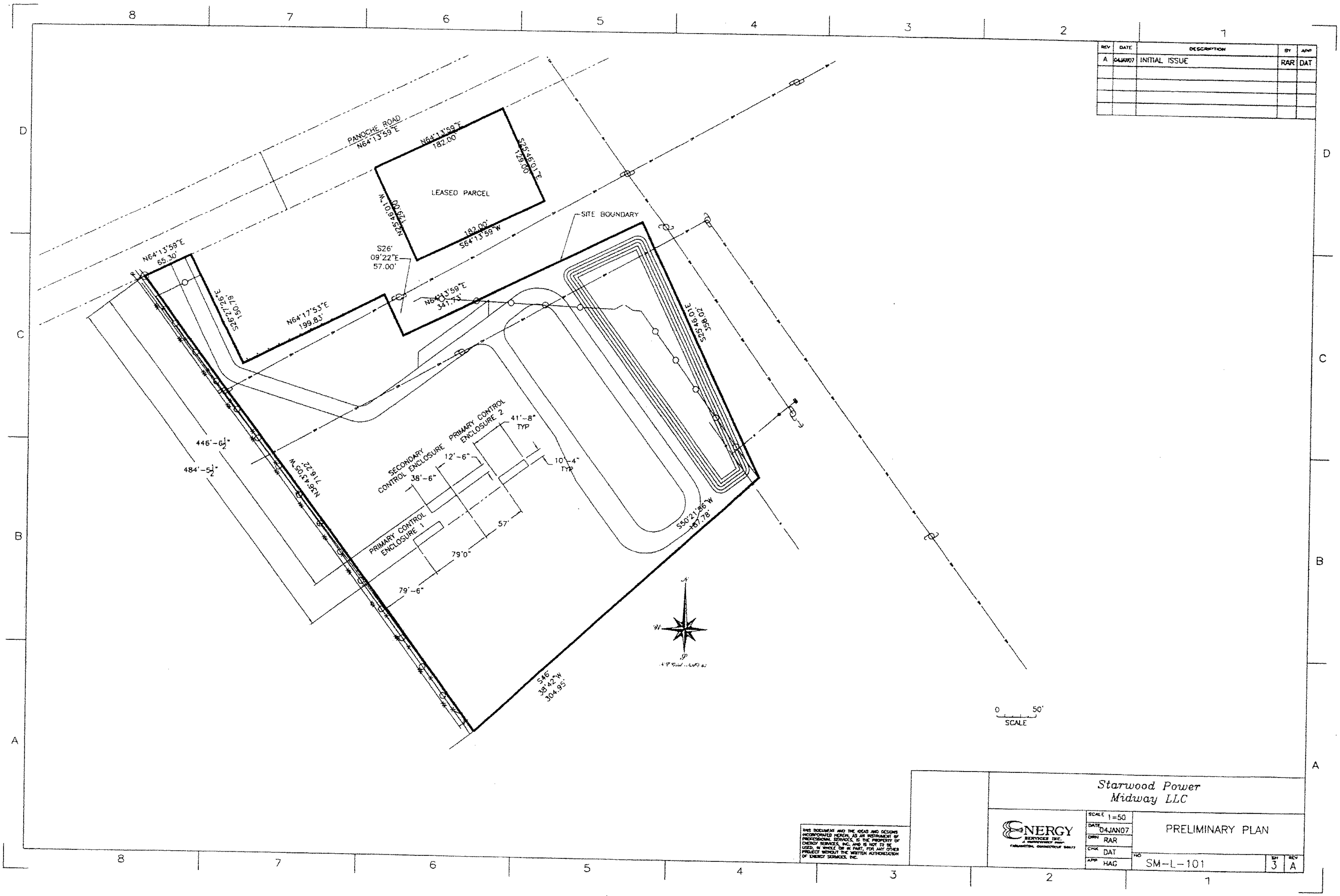

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S50°21'36"W
187.78'
S46°
38'42"W
304.95'
N36°43'05"W
718.22'
446'-6½"
484'-5½"
SECONDARY
CONTROL ENCLOSURE
PRIMARY CONTROL
ENCLOSURE 2
PRIMARY CONTROL
ENCLOSURE 1
41'-8"
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12'-6"
10'-4"
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Fresno County Department of Public Works and Planning

MAILING ADDRESS:
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, 6th Floor
Fresno, CA 93721

LOCATION:
Southwest corner of Tulare & "M" Streets, Suite A
Street Level
Fresno Phone: (559) 262-4055
Toll Free Phone: 1-800-742-1011

APPLICATION FOR:

- ☐ Amendment Application
- ☐ Amendment to Text
- ☐ Conditional Use Permit
- ☐ Director Review and Approval
- ☐ Site Plan Review/Occupancy Permit
- ☐ Variance/Minor Variance
- ☐ No Shoot/Dog Leash Law Boundary
- ☒ Other General Plan Conformity Application
- ☐ ALCC/RLCC
- ☐ Pre-Application (Check Type)
  - ☐ General Plan Amendment
  - ☐ Specific Plan Amendment
  - ☐ Specific Plan
- ☐ Determination of Merger
- ☐ Agreements

DESCRIPTION OF PROPOSED USE OR REQUEST:
Panoche Energy Center, LLC Power Plant. Whether proposed use is consistent with Existing Land use Designations

PLEASE TYPE OR PRINT IN BLACK INK. Answer all questions completely. Attach required site plans, forms, statements and deeds as specified on the Pre-Application Review.

LOCATION OF PROPERTY: South side of Panoche Rd
between S. Grannimo Ave and S. Fairfax Ave
Street address 45499 W. Panoche Rd. Firebaugh (not actual site)
APN 027-060-78S Parcel size 128 Ac Sec-Twp / Rg. 5 - 15S / 13E

LEGAL DESCRIPTION: (Attach Copy of Deed)

I, [signature] (signature), declare that I am the owner, or authorized representative of the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge. The foregoing declaration is made under penalty of perjury.

PAO Investments, LLC	45499 W. Panoche	Firebaugh CA	93622	
Owner (Print or Type)	Address	City	Zip	Phone
Applicant (Print or Type)	Address	City	Zip	Phone
Marcus D. Magness	7108 N. Fresno St. Ste 410	Fresno CA	93720	448-98
Representative (Print or Type)	Address	City	Zip	Phone

OFFICE USE ONLY

Application Type / No.:	General Plan	Fee:	$817	PLU	100
Application Type / No.:	Conformity	Fee:		PLU	
Application Type / No.:		Fee:		PLU	
Application Type / No.:		Fee:		PLU	
Initial Study No.:		Fee:		PLU	
Environmental Review:		Fee:		PLU	
Health Department Review:		Fee:		PLU	

Received by: [signature]
This permit is sought under Ordinance Section:
Related applications:
Drafting verification: Zone District:
APN# - -
APN# - -
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Sec. Twp. Rg. - /
Parcel Size

WHEN VALIDATED
THIS APPLICATION IS YOUR RECEIPT

** ORDER# 0038 **
KP # 1
001 GPCF 817.00
CINDY 07/18/2007 16:26 01 106049
01 07/18/2007 16:26 106049 TND
CHECK $817.00
CINDY

GREEN – DEPARTMENT COPY WHITE – APPLICANT COPY CANARY

Gilmore Wood Vinnard & Magness

A Professional Corporation
Attorneys at Law

James O. Demsey
Robert J. Tyler
David M. Gilmore
Russell O. Wood
Gerald D. Vinnard
Marcus D. Magness
William H. Leifer
Jody L. Winter

July 18, 2007

BY HAND DELIVERY

Ms. Margie McHenry
Mr. Jared Nimer
County of Fresno, Department of Public Works and Planning
Development Services Division
2220 Tulare Street
Fresno, CA 93721

Re: General Plan Conformity Applications – Starwood Power-Midway, LLC and Panoche Energy Center, LLC

Dear Ms. McHenry and Mr. Nimer,

As you know, our firm represents the owner of the real property on which the two proposed power plants will be situated in western Fresno County. On behalf of the landowner and as an accommodation to the proposed tenants (Starwood Power-Midway, LLC ("Starwood"), and Panoche Energy Center, LLC ("Panoche")), please find enclosed respective *General Plan Conformity Applications*. These applications are being submitted under a single cover as a result of both projects being situated on the same parcel (APN 027-060-78s) and both undergoing similar, but independent, approval processes with the California Energy Commission (CEC). Each application is accompanied by attachments and a filing fee in the amount of $817.00.[1]

As we have discussed, the CEC stated in its Panoche *Preliminary Staff Assessment* (also enclosed):

> "Staff cannot conclude that the Panoche Energy Center (PEC) is consistent with the Fresno County General Plan Agriculture and Land Use Element

Street Address
7108 N. Fresno St.
Suite 410
Fresno, California 93720

Mailing Address
Post Office Box 28907
Fresno, California 93729-8907

Email Address
mmagness@gwvm.com

Telephone (559) 448-9800
Facsimile (559) 448-9899

[1] Note: Due to a delay in the mails, the attachments for the Panoche application will be submitted tomorrow.

> because power plants are not expressly listed as a permitted or conditional use under that designation and Fresno County has not provided sufficient information that would demonstrate how the PEC is substantially similar in character and intensity to such uses listed in Table LU-3. Staff also cannot conclude the PEC is consistent with the AE-20 zoning designation because power plants are not expressly listed as a permitted or conditional use in that zone and Fresno County has not provided complete information in its Site Plan Review (SPR) analysis to determine whether the project would be consistent with the intent and purpose of the AE-20 zone."

By filing these applications, Starwood and Panoche request that the County provide the additional information sought by the CEC.

I appreciate your attention to these applications. Please do not hesitate to call.

Very truly yours,

Marcus D. Magness

Enclosures

cc: Richard Weiss, Starwood Power-Midway, LLC
David Jenkins, Panoche Energy Center, LLC

January 24, 2007

The County of Fresno
Site Plan Review

Starwood Power-Midway LLC
West Panoche Road
Firebaugh, CA 93662

Richard H. Weiss
Starwood Power-Midway LLC
2737 Arbuckle St
Houston, TX 77005
713-662-3688
713-828-1801 cell

SITE PLAN REVIEW SUBMITTAL REQUIREMENTS

DATE: 1/24/07 PROJECT ADDRESS: West Panoche Road

OWNER: Starwood Power-Midway LLC

ADDRESS: 591 West Putnam Ave, Greenwich CT 06830

APPLICANT/REPRESENTATIVE: Richard H. Weiss

ADDRESS: 2737 Arbuckle St. Houston TX 77005

A. GENERAL REQUIREMENTS

1. A total of eleven (11) copies of the plan must be submitted with the application.

1A. A total of four (4) copies of building elevations and four (4) copies of building floor plans.

2. The plan must be drawn on a sheet having a minimum dimension of 18" x 24".

3. The plan must show the entire parcel described in the application. If only a portion of an existing parcel is to be developed, or if the development includes two (2) or more sheets, a key map shall be included showing the entire parcel.

4. The plan must be drawn to scale, and the scale must be clearly shown. (Scale shall be large enough to adequately show the required information).

5. The plan shall be oriented to the north and show an accurate north arrow.

6. Each plan shall be folded individually with bottom right hand corner facing up. Maximum size accepted shall be 9"x12"

NOTE: A grading and drainage plan showing how the runoff from the property shall be retained on said property MAY BE REQUIRED. The grading and drainage plan must be prepared by a Registered Civil Engineer.

Development within the Fresno Metropolitan Flood Control District may require a fee to be paid prior to the issuance of building permits.

L E G E N D

X - Correction Needed
  - Satisfied
0 - Not Applicable

B. SPECIFIC INFORMATION TO BE SHOWN (IF APPLICABLE)

COUNTY APPLICANT

(_____) (_____) 1. All existing and proposed buildings and structures, including buildings to be removed.

(_____) (_____) 2. The proposed use of all buildings and structures.

(_____) (_____) 3. All adjacent streets and roads and their names.

_____) (_____) 4. Access to the property: pedestrian, vehicular, and service.

_____) (_____) 5. Access to buildings: size and location.

_____) (_____) 6. Pedestrian walkways: (1) Location, (2) Width, and (3) Type of pavement and type of slip-resistant finish.

_____) (_____) 7. Proposed street improvements and dedications.

(a) service utilities

_____) (_____) 8. Existing and proposed off-street parking and loading areas.

(a) Location

(b) Type of paving

(c) Number of spaces (detailed layout)

(d) Internal circulation pattern

(e) Dimension of all parking and loading spaces

(_____) (_____) 9. The following measurements:

a. All dimensions of property or properties.

b. All dimensions of buildings and structures (including height and elevation plan, if available).

c. The distance of all buildings, structures, fuel tanks or storage tanks from property lines.

d. The distance between all buildings, structures, fuel tanks and storage tanks.

e. Contours of land, if natural slope is greater than ten percent.

f. Irrigation canals or easement.

(_____) (_____) 10. Walls, retaining wall, and fences: Location, height, and type of material.

(_____) (_____) 11. Existing and proposed signs: (1) Location, (2) type of lighting, (3) face area, and (4) height.

(_____) (_____) 12. Existing and proposed on-site lighting:

(a) Location

(b) Type of lighting

(c) Height

(d) Method of controlling glare and illumination.

(_____) (_____) 13. Landscaping: location and type of plant material.

(____) (_____) 14. All existing wells and private sewage disposal systems within 150' adjacent to each other shall be delineated.

(_____) (_____) 15. Handicap requirements (waiver).

(____) (____) 16. Show all natural drainage channels.

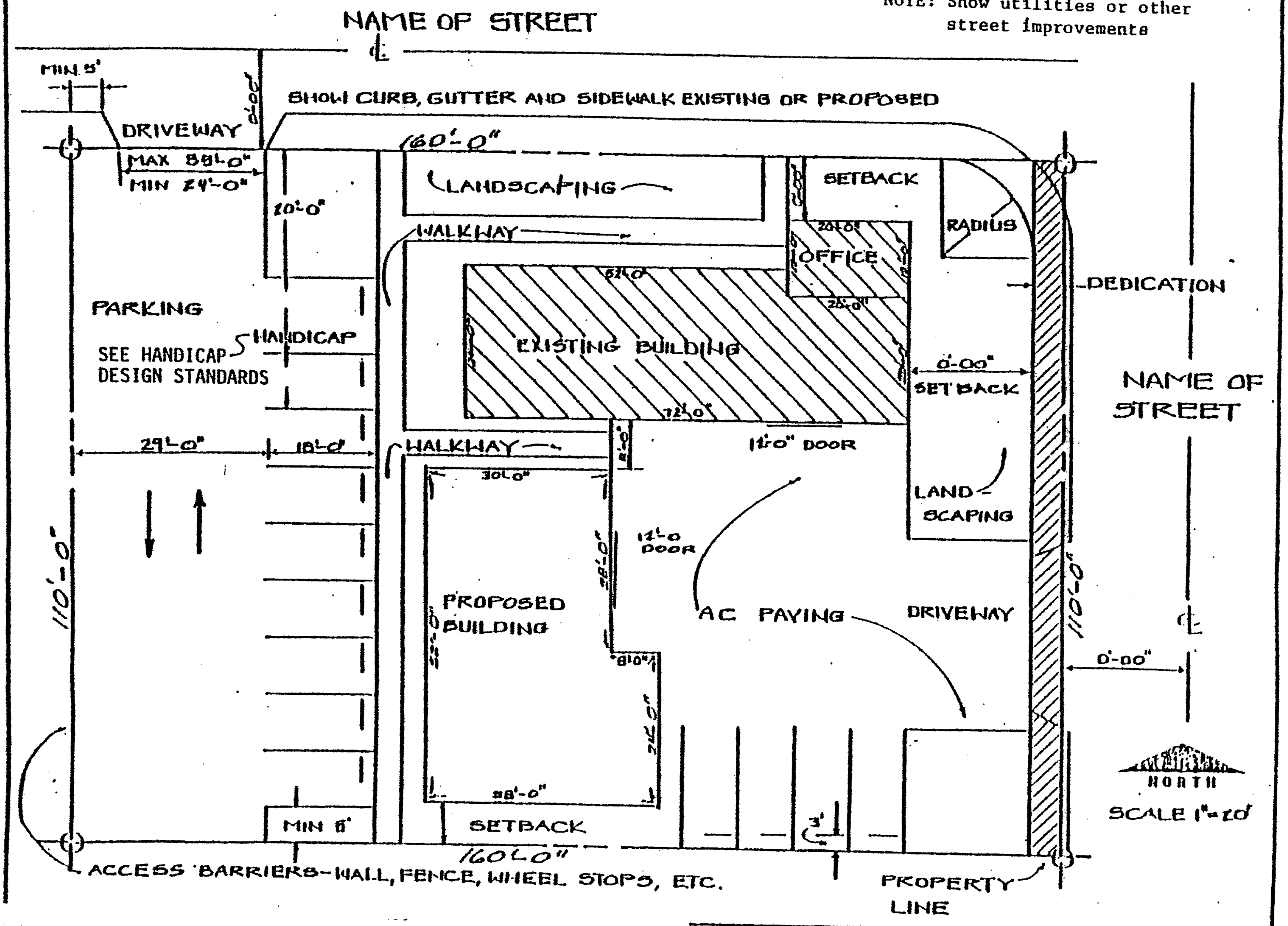
(____) (____) 17. A floor plan shall be submitted for places of assembly to calculate parking.

(____) (____) 18. An employee and vehicle statement shall be submitted for industrial and manufacturing uses to calculate parking.

(____) (____) 19. Show where solid waste will be picked-up. Garbage trucks require a minimum turn around radius of 37 feet.

EXAMPLE

NOTE: Show utilities or other street improvements



Development

Services

Division

Operational Statement Checklist

DEPARTMENT OF PUBLIC WORKS AND PLANNING

It is important that the operational statement provides for a complete understanding of your proposal. The operational statement that you submit **must** address all of the following that apply to your proposal. **Your operational statement must be typed or written in a legible manner on a separate sheet(s) of paper. Do not submit this checklist as your operational statement.** It should serve only as a guide for preparing a complete statement.

____ 1. **Nature of the operation--what do you propose to do? Describe in detail.**

____ 2. **Operational time limits:**
Months (if seasonal): Days per week:
Hours (from ______ to ______) Total hours per day:
Special activities: Frequency: Hours: Are these indoors or outdoors?

____ 3. **Number of customers or visitors:**
Average no. per day: Maximum no. per day: Hours (when they will be there):

____ 4. **Number of employees:**
Current: Future: Hours they work: Do any live on-site as a caretaker?

____ 5. **Service and delivery vehicles:**
Number: Type: Frequency:

____ 6. **Number of parking spaces for employees, customers, and service/delivery vehicles.**
Type of surfacing on parking area.

____ 7. **Are any goods to be sold on-site? If so, are these goods grown or produced on-site or at some other location?** Explain.

____ 8. **What equipment is used?** If appropriate, provide pictures or brochure.

____ 9. **What supplies or materials are used and how are they stored?**

____ 10. **Does the use cause an unsightly appearance?**
Noise? Glare? Dust? Odor?
If so, explain how this will be reduced or eliminated?

____ 11. **List any solid or liquid wastes to be produced.**
Estimated volume of wastes: How and where is it stored?
How is it hauled, and where is it disposed? How often?

____ 12. **Estimated volume of water to be used (gallons per day).** Source of water?

____ 13. **Describe any proposed advertising including size, appearance, and placement.**

____ 14. **Will existing buildings be used or will new buildings be constructed?**
Describe type of construction materials, height, color, etc. Provide floor plan & elevations, if appropriate.

____ 15. **Explain which buildings or what portion of buildings will be used in the operation.**

____ 16. **Will any outdoor lighting or an outdoor sound amplification system be used?**
Describe and indicate when used.

____ 17. **Landscaping or fencing proposed?** Describe type and location.

____ 18. **Any other information that will provide a clear understanding of the project or operation.**

PUBLIC HEARING WAIVER

I, ____, the owner of the parking facility located at ____, have elected to waive the required public hearing before the Board of Supervisors relating to the enforcement of parking for the physically handicapped, per Section 855-I-4.E. of the Fresno County Zoning Ordinance. I declare the parking facilities will be held open for use of the public, subject to approval of Site Plan Review No.__________.

____

OWNER - (Signature)

EMPLOYEE AND VEHICLE STATEMENT
FOR SITE PLAN REVIEW

Total number presently employed	1
Number of employees to be added	1
Number of salesmen	0
Total number of trucks and/or other company vehicles	0
Number of trucks and/or company vehicles to be added	0

____
Signature of Owner

Richard G. Wi

Signature of Authorized Representative and Title of Individual

DIRECTOR
STARWOOD POWER-MIDWAY LLC

SECTION 3 FACILITY DESCRIPTION AND LOCATION

3.1 INTRODUCTION

The Starwood Power–Midway, LLC Peaking Project (Midway) is a proposed simple-cycle electric generating facility located within western Fresno County adjacent to the Panoche Hills and east of the San Benito county line. The 5.6-acre project site is approximately 50 miles west of the city of Fresno and approximately 2 miles east of the Interstate 5 (I-5). The proposed facility will include two (2) FT8-3 SwiftPac Combustion Turbine Generator (CTG) units installed in a simple-cycle power plant arrangement. The gas turbines are equipped with a water injection system to reduce production of nitrous oxides (NOx), a selective catalytic reduction system (SCR) with 19% aqueous ammonia to further reduce NOx emissions, and an oxidation catalyst to reduce carbon monoxide (CO) emissions. The nominal plant power rating will be 120 megawatts (MW).

Each SwiftPac unit has two (2) FT8-3 combustion gas turbines that drive opposite ends of a single electric generator. The FT8 generating package has been in operation at locations around the world since 1992. The FT8 package is a modernization and more efficient version of the older Pratt & Whitney (P&W) FT4 package, which was sold for over 30 years, and is still operating in many locations, including California. The most critical components of the FT8 package are the P&W GG8 engines which have been adapted from the JT8D commercial aviation engine as its core. The JT8D heritage dates back to the early 1960's and P&W has sold nearly 15,000 of those engines.

On a worldwide basis there are multiple FT8 packages operating or under construction, in sum containing a total of 289 GG8 engines. Some are single engine applications and some are dual engine applications. These 289 units have a total of nearly 2 million operating hours. There are 5 dual engine FT8 applications in California operated by CalPeak Power, LLC that have been in operation since 2002 and have demonstrated an average availability of 97% since startup.

Three models of the FT8 package that have been developed and are labeled FT8-1, FT8-2, and FT8-3. The FT8-1 model uses water injection into the combustor to control NOx formation and was the original version of the GG8 engine developed in the early 1990's. In the mid 1990's a combustor was developed to reduce NOx formation without water injection (DLN or dry low NOx) and this version of the GG8 engine was labeled FT8-2. All other aspects of the FT8-1 and FT8-2 engines are identical. The power output of the FT8-2 engines are less than the FT8-1 engines because the water injection contributes to mass flow through the engine in addition to reducing NOx formation.

The FT8-3 model (proposed for use at Midway) is also a slight modification of the FT8-1 engine and was introduced in 2004. The FT8-3 uses some thermal barriers and coatings traditionally used in other P&W aviation engines in the hot section of the turbine. This improvement in the hot section of the turbine allows the engine to generate approximately 15% more power than the FT8-1 at essentially the same cost. This hot section design has been used in aviation engines for over 10 years and was migrated to the land based engines in 2004. There are now 54 FT8-3 engines operating or under construction around the world. The FT8-3 engine is only offered with water injection to control NOx production.

The two SwiftPac units proposed for Midway consist of dual engine FT8-3 engines with each unit nominally rated at 60MW under ISO (International Organization for Standardization) conditions. These units are similar to the five FT8-2 units that CalPeak Power operates in California (the FT8-2 units are nominally rated at 50MW). As stated previously, these CalPeak units have demonstrated an availability of 97% since operation began in 2002.

In summary, the P&W FT8 units have been a reliable and proven technology for over 15 years and for 30 years prior to that in the form of the less efficient FT4 units. The dual engine design provides advantages in reliability and operating flexibility since the units can be operated with one engine. Midway will be efficient, environmentally compliant and reliable with the use of FT8 technology.

Typical operating hours for the Midway site will be comparable to the existing CalPeak Panoche plant located adjacent to the Midway site. The Midway plant will have the same heat rate as the CalPeak Panoche plant, and therefore would be dispatched for system operation in a similar manner. Currently the CalPeak Panoche plant runs substantially less than 400 hours per year, averageing approximately 4.5 hours per start.

3.2 FACILITY LOCATION

The project site is located in the unincorporated area of western Fresno County approximately 50 miles west of the city of Fresno. The site is adjacent to the Panoche Hills and east of the San Benito County line. West Panoche Road lies just north of the site. The nearest intersections are West Panoche Road and South Fairfax Avenue approximately one mile to the northeast and West Panoche Road and I-5 approximately 2 miles to the southwest. The site is more specifically described as the Southwest Quarter of Section 5, Township 15, Range 13 East, on the USGA Quadrangle map. (Figure 3.2-1). The assessor parcel number (APN) is 027-060-78S.

3.3 SITE DESCRIPTION

The facility will be situated on approximately 5.6 acres of land within a 128-acre parcel. The plant site is leased by the applicant from the property owners. Portions of the 128-acre parcel, not used for electric generation facilities, are currently in agricultural production with pomegranate trees. The 5.6-acre site is used as a storage-yard by CalPeak Power and contained several large pieces of equipment and items used at the CalPeak Panoche plant directly southwest and adjacent to the site. A Wellhead Peaker Plant is southeast and the PG&E Panoche Substation is to the west. The land surrounding these electric facilities is agricultural. The site is relatively flat and supports sparse growth of annual, ruderal weeds and grasses.

3.3.1 Topography

Site topography, shown in Figure 3.3-1, is generally flat. The elevation ranges from approximately 400 feet above mean sea level (msl) at the northwest corner of the site closest to West Panoche Road and gently slopes to the southeast where the elevation is approximately 395 feet above msl. . The natural earth material consists of layers of silt, lean clay and sand.

3.3.2 Geologic Setting and Seismology

A general description of Site geology and seismology is outlined in the sections which follow.

3.3.2.1 Subsurface Conditions

During July of 2006 a field geotechnical exploration was conducted by Kleinfelder, Inc. Nine test borings were drilled within the project site with depths of up to 41.5 feet with the exception of one boring to a depth of 101.5 feet below existing ground surface. Soils encountered include silt near the surface underlain by discontinuous layers of silty sand, lean clay and poorly graded sand. No Groundwater was encountered within the depths explored.

3.3.2.2 Seismic Conditions

The project site and its vicinity are in an area traditionally characterized by low seismic activity. There are no known faults that cut through the local soils in or near the site. The site is not located in and Alquist-Priolo Earthquake Fault zone. Review of published data, the current geologic framework, and the tectonic setting of the proposed development reveal that the primary source of seismic shaking at the Project site is anticipated to be the Great Valley Fault System, Segment 12, which is located approximately 4.7 miles southwest of the site.

There are no anticipated geotechnical factors at the Project site that are unique and require special seismic consideration. The Project site is within Seismic Zone 3 of the Uniform Building Code (UBC). The California Energy Commission (CEC, 1989) recommends that non-nuclear power plants be designed to the level of conservatism implied by the Uniform Building Code (ICBO, 1997). Seismic Zone 4 of the UBC is the highest earthquake hazard zone recognized by the code and the Midway project will build to the specifications required for Seismic Zone 4.

3.3.2.3 Liquefaction Potential

Liquefaction and associated settlement of soils due to ground shaking generally occurs under four specific conditions. 1) The subsurface soils are in a relatively loose state; 2) the soils are saturated; 3) the soils are non-plastic; 4) ground shaking is of sufficient intensity to act as a triggering mechanism. The absence of groundwater (mentioned previously in Section 3.3.2.1) precludes these conditions being present and therefore the potential for liquefaction to occur is remote.

3.3.3 Hydrological Setting

The project lies in the western portion of the San Joaquin Valley which is characterized as semi-arid with relatively mild winters and long, hot, dry summers. Intermittent wet periods occur making the area's average precipitation approximately 11 inches. Average annual temperature is 63.3 degrees. The nearest weather station to the site is located outside of Fresno, approximately 45 miles to the east.

3.3.3.1 Surface Water

There are no long-term natural or artificial water bodies in the vicinity of the site, except for the California Aqueduct over two (2) miles to the East. Surface streams are dry most of the year. Flow in streambeds in the Panoche Fan area occurs as brief runoff events following precipitation. The largest streambed in the area is Panoche Creek, which flows from the southwest approximately two miles northwest of the project site. In the immediate vicinity of the site, precipitation runoff occurs as sheet flow to the northeast across the alluvial fan surface of the site. The entirety of the Midway site is included within the special flood hazard area inundated by the 100-year flood with no base flood elevation determined (Zone A) on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map.

3.3.3.2 Groundwater

Groundwater in the western San Joaquin Valley occurs in thick alluvial aquifers that fill the valley. Aquifers underlying the site include a lower confined zone and an upper semiconfined zone that are separated by the Corcoran Clay of the Tulare Formation. The site is located in the Westside Sub-basin of the San Joaquin Valley Groundwater Basin.

Historically, groundwater was extensively used for agricultural development of the area surrounding the site. Groundwater withdrawal caused compaction of aquifer systems and extensive ground subsidence. Pumping of groundwater for agricultural use was substantially reduced following delivery of surface water to the region in the late 1960s, and land subsidence due to groundwater withdrawal has slowed considerably or stopped in most of the San Joaquin Valley. Agricultural use of groundwater in the area is limited except in times or drought when surface water supplies are curtailed.

3.4 FACILITY DESCRIPTION

3.4.1 Overview

The Midway project will consist of two (2) FT8-3 SwiftPac Combustion Turbine Generator units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. The two (2) FT8-3 CTG units will be part of a power plant that will also include the following Balance of Plant (BOP) equipment/systems:

- One (1) CTG Main Step-up transformer (13.8/115 kV)
- An SCR/CO catalyst system that will be implemented on both CTG units to provide post-combustion emissions control. The facility will include an aqueous ammonia storage and delivery system in support of the SCR catalyst system
- A Water Treatment system starting with a Reverse Osmosis (RO) unit will feed a demineralizer to provide high-purity water to the gas turbines for water injection / inlet fogging. Water injection will be utilized for control of NOx emissions during combustion. Inlet fogging will be utilized to provide cooling of inlet air. The water treatment system will

include one (1) 75,000 gallon Raw Water Storage Tank, an RO unit, a Mobile Water Treatment system (i.e., Demineralizer Trailers on a pad), two (2) 75,000 gallon Demineralized (DI) Water Storage Tanks, and a forwarding system to deliver the demineralized water to the gas turbines.

- A Natural Gas Fuel system that will supply natural gas to the gas turbines in a manner that meets the required engine specifications (i.e., pressure, flow, quality). The project will tie into the existing 6" diameter fuel natural gas supply pipeline for the CalPeak Panoche plant, which in turn ties into the PG&E main gas truckline running along West Panoche Road. A separate meter and 6" line will supply Midway with natural gas.
- A Compressed Air system that will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include two (2) air compressor skids and one (1) dryer skid.
- A Waste Water system to collect oily water waste from equipment locations. This system will include a CTG drain system with storage tank(s) to contain drainage from the CTG units. Oily waste will be collected in sumps and pumped to above-ground storage tanks (ASTs).The oily waste will be sent off-site for disposal.
- A Site Stormwater Drainage system that will handle drainage of rainwater from non-equipment locations.
- A lined evaporation pond that will collect discharge wastewater from the RO Unit.

3.4.2 List of Major Equipment

The following is an all inclusive list of the equipment which will be part of the Midway Project.

1. Two (2) FT8-3 SwiftPac Combustion Turbine Generator units. Each CTG unit includes, but is not necessarily limited to the following major assemblies:

    a) Two (2) CTG Driver Assemblies with engines, lube oil systems, enclosures
    b) One (1) Electric Generator
    c) One (1) Electric Generator Lube Oil System
    d) One (1) Electric Generator Enclosure With Silencers
    e) One (1) CTG Control House
    f) One (1) 15 kV Bus Duct Assembly
    g) Two (2) CTG Inlet Silencers
    h) Two (2) CTG Inlet Filter Houses with ladders and platforms
    i) Two (2) Engine Heater Skids
    j) One (1) Hydraulic Start Skid
    k) Two (2) Gas Fuel Metering and Filter Skids
    l) Two (2) Water Injection Skids for NOx Control
    m) Two (2) Fire Protection Skids

n) Two (2) Buffer Air Heat Exchangers
o) Interconnecting Field Piping
p) Cable Tray System
q) One (1) Fogging Pump/Control Skid – for Inlet Air Cooling
r) Two (2) Fogging Inlet Spool Pieces
s) One (1) Water Wash Skid – per unit

2. One (1) Gas Fuel Coalescer/Filter
3. Two (2) SCR/CO Catalysts - each with 50' Exhaust Stack
4. Two (2) Aqueous Ammonia Storage Tanks
5. One (1) Aqueous Ammonia Forwarding Skid
6. Two (2) Aqueous Ammonia Injection Control Skids
7. One (1) Wash Down Drain Tank
8. Two (2) Continuous emissions monitoring system (CEMS) Monitors
9. Two (2) DI Water Tanks (75,000 gallons each)
10. One (1) Raw Water Tanks (75,000 gallons)
11. Provision for Mobile Water Treatment Trailers
12. One (1) DI Water Forwarding Skid
13. Two (2) Air Compressor Skids
14. One (1) Air Dryer/Tank Skid
15. One (1) Generator Step-Up Transformer (13.8/115 kV)
16. One (1) 480V Auxiliary Transformers
17. 480V Switchgear
18. Plant MCC's
19. One (1) 1,000 Gallon CTG Drain Holding Tanks – per unit
20. Reverse Osmosis (RO) Unit
21. One (1) Oily Waste Storage Tank (4,700 gallon)

Table 3.4-1 provides further information about key equipment.

TABLE 3.4-1
DIMENSIONS OF KEY EQUIPMENT

Dimensions of Key Equipment				
Qty.	Description	Length (Feet)	Width (Feet)	Height (Feet)
2	Combustion Turbine Generator Units	120	35	33 (Top of CTG Inlet Air Filter)
1	GSU Main Transformer Dead End Structure	50	25	50
2	Exhaust Stack	N/A	15 - diameter	50
2	Primary Control Enclosure	45	12	15
1	Secondary Control Enclosure	40	15	15
3	Water Storage Tanks (Vertical)	23' diameter	n/a	25
2	Ammonia Injection Skids	10	10	10
1	Ammonia Fwd Skid	10	10	10
2	Ammonia Tank (Horizontal)	16'	n/a	12' diameter
2	SCR/CO Catalyst	65	20	45
1	DI Water FWD Skid	10	10	10
1	RO Unit	12.5	3.7	7.1

All structure dimensions shown are approximate. Actual dimensions will be determined during detailed design.

3.4.3 Site Access

Site access from West Panoche Road would be provided via a 20-foot wide access roadway easement adjacent (east of) the PG&E Substation. From a proposed entrance gate, which would be located just south of West Panoche Road, the proposed access roadway would be graded gravel and run for approximately 250 feet south and east to the site. At the project site the proposed roadway would become asphalt, with a vehicle turnaround area providing access to the project equipment. The asphalt portion of the proposed roadway would be approximately 1,150 feet.

3.4.4 Site Layout

The site layout shows the location and size of the proposed plant facilities including off-site improvements. The plant facilities have been arranged for optimum use of the property as well as to ensure ease of maintenance and operation.

Off-site improvements associated with the project include an approximate 300-foot electric transmission line to tie into the PG&E Substation, a 1,200-foot underground water pipeline connecting the project to the existing CalPeak Panoche plant well adjacent to the project site, 50 feet of new gas transmission line and a gas metering set which will tap into the existing PG&E gas trunkline.

Midway includes the plant site and all of the described on-site and off-site improvements.

3.4.5 Power Plant Cycle

Approximately 60 MW of electricity is produced by each of the two CTGs. Output is dependent on inlet air ambient conditions and inlet evaporative cooling. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. The CTGs are equipped with SCRs to reduce NO_x, CO, and volatile organic compound (VOC) emissions.

The following paragraphs describe the major components of the generating facility.

3.4.5.1 Gas Turbine Generator

The Midway project will use two (2) FT8-3 SwiftPac CTG units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. Each CTG unit will consist of two (2) FT8-3 combustion gas turbines and one (1) electric generator. The FT8-3 combustion gas turbines are aero-derivative engines designed by Pratt and Whitney Power Systems.

3.4.5.1.1 CTG Water Injection Combustors

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O_2. The FT8-3 SwiftPac units will also limit CO levels at the exit of each CTG to 19 ppmvd referenced to 15% O_2.

3.4.5.1.2 Post-Combustion Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

Aqueous ammonia (NH_3) will be introduced upstream of the SCR catalyst. The catalyst causes NH_3 to combine with NO_x, producing N_2 and H_2O. The SCR system will limit NO_x emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. The SCR/CO Catalyst system will also limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2.

The emission rates include estimates of particulate (PM_{10}) emissions. A stack exit PM_{10} level of 3.7 pounds per hour for each SwiftPac unit (two turbines operating) is expected at 100% power, based on results for source tests conducted over several years at the CalPeak Panoche facility.

CEMS will be utilized to monitor NOx, CO, and oxygen levels at the stack exit.

3.4.5.1.3 Emissions Dispersion

The exhaust gases will exit through a vertical stack. The stack discharges the gases to the atmosphere at a minimum temperature of approximately 730 °F and at a height of 50 feet above finished grade. At this temperature and elevation the gases mix with ambient air and are dispersed.

3.4.5.2 Performance Data

Predicted performance data play a major role in the selection of turbine generators. Key performance data are power output, fuel input and heat rate. Refer to Figures 3.4-3A, 3.4-3B, and 3.4-3C for heat/mass balances at 100% power for three different ambient conditions (low temp, high temp, and ISO conditions). Note that these heat/mass balances are per SwiftPac Unit. The plant will have two SwiftPac Units – each with the same performance characteristics.

Gas turbine power output and efficiency are greatly affected by atmospheric conditions and load variations. Power output is roughly proportional to mass flow which increases as the inlet air becomes colder and denser. Higher humidity makes the air less dense and also decreases the oxygen level per unit mass. Consequently, more fuel can be added and more power is produced at lower temperatures and humidity. Alternatively, less fuel can be added and less power is produced at higher temperatures and humidity. Turbine efficiency decreases as conditions depart from the optimum full-load design point.

3.4.5.3 Emissions Data

Air pollutant emissions are affected by turbine design and operating conditions. NOx startup and shutdown emissions are based upon actual data recorded for the CalPeak units and standard industry formulas.

3.4.6 Heat Rejection System

The FT8-3 SwiftPac unit auxiliary heat exchangers are all air-cooled fin-fan types. The SCR/CO Catalyst system also includes an air-cooled heat exchanger to maintain stack temperature less than the catalyst design upper limit.

3.4.7 Major Electrical Equipment and Systems

An overall one-line diagram of the proposed facility electrical generation and distribution system is shown in Figure 3.4-4 A & B. The CTG produces power at 13.8 kV. The generator output passes through a step-up transformer where the voltage is increased to a transmission level of 115 kV for interconnection to the existing CalPeak Peaker Generator tie line. A portion of the plant output is converted to lower voltages to be utilized on-site for power station auxiliaries via a 480V Auxiliary Transformer. A 125 Voltage Direct Current (VDC) system provides battery power for an alternating current (AC) uninterruptible power supply (UPS) and for direct current (DC) control systems.

3.4.7.1 Step-up Transformers

The FT8-3 SwiftPac Combustion Turbine Generator (CTG) units generate power at 13.8 kV. The electricity generated at 13.8kV will be stepped up to 115 kV for transmission by a three-winding, oil-filled, generator step-up transformer (GSU). The transformer is anchored on concrete foundations that also provide oil containment. The high side of the step-up transformer is terminated at the plant 115kV switchyard. Surge arrestors are installed on the high voltage bushings of the transformer to protect the transformer from surges due to lightning strikes, switching or other disturbances on the 115 kV system. Transformer impedances and turns ratio are to be selected to optimize 115 kV system volt amps reactive (VAR) support by the generators. Transformer will have no-load tap changer at the high voltage side.

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to take care of the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be solidly grounded.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to motor control centers (MCCs). The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.2 115kV Switchyard

The 115 kV transmission system will enter the Midway switchyard via the dead end structure. An 115 kV circuit breaker with twelve integral current transformers provides the switching for installation. 115 kV air break disconnect switches provide breaker isolation as required by Code. A set of 115 kV potential devices connected to the dead end structure provide system voltage for Utility metering and site voltage monitoring schemes. One set of current transformers at the 115 kV breaker is to be specified with metering accuracy and is to be used as the required input to the utility metering package

Control, protection and monitoring panel or devices for the switchyard will be located in the electrical building and generation control module. Monitoring and alarms will be available to the PLC operator workstations in the control room. The 125Vdc battery system will provide control and protection voltage to circuit breakers.

The switchyard design will meet the requirements of the National Electrical Safety Code-ANSI C2.

A grounding grid will be provided to control step and touch potentials in accordance with IEEE Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required. The substation ground grid will be tied to the plant ground grid.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

The protection will be designed to maintain redundancy at the 115 kV level. The transformer will be protected by differential, over current and restricted ground fault loops. A second and redundant protection using separate instrument transformers will provide protection for the 115 kV breaker, transformer and generators breakers. There will be a breaker failure scheme associated with the 115 kV breaker. Interfaces requited with the PG&E system are included in the design. Each generator protective system has a breaker failure scheme. The 115 kV circuit breaker will have 2 redundant trip coils.

Interface with PG&E's supervisory control and data acquisition (SCADA) system will be provided. Interface will be at the interface terminal box and RTU. Communication between the facility switchyard and the control building to which it is connected will be included.

3.4.7.3 AC Power Distribution

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to handle the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be high resistance grounded to minimize the need for individual ground fault protection.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to MCCs. The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.4 DC Power Supply

The DC power supply system for BOP loads will consist of two 125V DC battery bank, two 125V DC full capacity battery chargers, metering, ground detectors, and distribution panels. One 125V DC battery bank will be dedicated to the essential service uninterruptible power supply (UPS) system. The other 125V DC battery bank will feed all other station DC loads. Additional 125V DC systems may also be supplied as part of the CTG equipment.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480V, 3-phase AC power from the AC power supply (480V) system and continuously float-charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions when power from the AC power supply (480V) system is unavailable, the battery will supply DC power to the DC power supply system loads. Recharging of a discharged battery will occur whenever 480V power becomes available from the AC power supply (480V) system. The rate of charge will be dependent on the characteristics of the battery bank, battery charger, and the connected DC load during charging. However, the anticipated maximum recharge time will be 12 hours.

The BOP 125V DC system will be used to provide control power to the 4,160V switchgear, the 480V SUSs, and to critical control circuits.

3.4.7.5 Uninterruptible Power Supply (UPS) System

The CTGs will also have an essential service 120V AC, single-phase, 60 hertz power source to supply AC power to essential instrumentation, critical equipment loads, and unit protection and safety systems that require uninterruptible AC power. Both the essential service AC system and the DC power supply system will be designed to ensure that all critical safety and unit protection control circuits always have power and can take the correct action on a unit trip or loss of plant AC power.

The essential service AC system will consist of one full-capacity inverter, a solid-state transfer switch, a manual bypass switch, an alternate source transformer and voltage regulator, and AC panel boards for each CTG.

The normal source of power to the system will be from the DC power supply system through the inverter to the panel boards. A solid-state static transfer switch will continuously monitor both the inverter output and the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter-static transfer switch for testing and maintenance without interruption to the essential service AC loads.

3.4.7.6 Emergency Power System

In the event of a total loss of auxiliary power, or in situations when the utility transmission system is out of service, the emergency power required for emergency lighting and CTG critical loads, such as turbine lube oil pumps, will be provided from batteries.

3.4.8 Natural Gas Fuel System

The FT8-3 SwiftPac Combustion Turbine Generator units will operate solely on natural gas. Natural gas will be supplied from PG&E's trunk line system immediately to the north of the property and would require approximately 50 feet of new line at the Midway site in order to tap into the existing PG&E system. Each FT8-3 SwiftPac CTG unit requires an approximate maximum feed of 625MMBtu/hr at 500-600 psig fuel gas pressure, and approximately 12,000 standard cubic feet per minute (SCFM) of flow at ISO, 100% power conditions. The natural gas supply pipeline will supply the required inlet pressure without need of supplemental compression.

3.4.9 Water Supply and Treatment

The process uses for water are NOx control and inlet cooling. The Midway project has three viable alternate water supply sources:

1. The existing CalPeak Panoche Well (Upper Aquifer Groundwater)

2. Irrigation Return Flow – Agricultural Backwash Pond

3. New Deep Well at Project Site (Lower Aquifer Groundwater)

Regardless of the water supply source, the plant will store water in three 75,000-gallon storage tanks, one for raw water and two for demineralized water. The Midway plant will use an RO unit to filter the water prior to demineralization. The RO wastewater will be discharged into a 25,000 square foot pond for evaporation.

The plant water needs can be satisfied from any of the proposed sources. It should be noted that if the facility were to operate in excess of 400 hours in a year, the quantity of the wastewater generated could exceed the capacity of the evaporation pond. However, if the plant were to operate for enough hours so that the RO wastewater evaporation pond reaches its design capacity, the RO unit would be shut down and the demineralization units would run on raw water. This approach would eliminate a RO wastewater flow but would require more frequent replacement of the demineralizer (about once every other day). A vendor will perform demineralizer unit regeneration off site.

3.4.9.1 Water Balance and Supply Requirements

Essential plant functions requiring water are inlet cooling of the CTG inlet air which is done via the SwiftPac Inlet Fogging skid, water injection for NOx control during CGT combustion, and utility water for washdown and other purposes. The peak supply flow rate required at the site is approximately 138 gpm.

3.4.9.1.1 Water Balance

Plant water supply requirements and water balance calculations for the Midway project are tabulated and illustrated in Figure 3.4-5 of this document. The Figure provides peak water usage supply conditions. More specifically, Midway peak water requirements are as follows.

The peak flow rates are:

NOx Control	98GPM
Inlet Fogging	40GPM

During a typical 4.5 -hour operating day the plant will require approximately 49,680 gallons of water. The operating water requirements are based upon the expected 400 annual service hours and the Power Purchase Agreement (PPA) maximum 4000 hours are shown in Table 3.4-2 below.

TABLE 3.4-2
MIDWAY ANNUAL WATER SUPPLY REQUIREMENTS

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Expected Operating Hours (400)	47	101	176	76	**400**
Water Consumption (acre-feet)	1.6	3.4	6.0	2.6	**13.6** (4.4 million gallons)
PPA Maximum Hours (4,000)	800	800	1,400	1,000	**4,000**
Water Consumption (acre-feet)	27.1	27.1	47.4	33.9	**135.6** (44.2 million gallons)

*The data is based upon operating at maximum water flow conditions at 114 degrees

3.4.9.1.2 Water Supply Sources

The Midway project has the option to use a number of alternate water sources.

Existing CalPeak Panoche Well (Upper Aquifer Groundwater) The Midway project can use well water from the existing well at the neighboring, CalPeak Panoche project., The 400-foot deep well has been tested to produce 100GPM and has TDS of approximately 3,400 ppm.

Irrigation Return Flow – Agricultural Backwash Pond The Midway site is located on a 128-acre parcel of land owned by PAO Investments, LLC. A large portion of this parcel and approximately 7,000 acres of land in the region is farmed by the Baker Farming Company, LLC (Baker). To take advantage of the economies of scale, Baker has developed a water delivery system that serves all of the property it farms in this area. The water system is owned and operated by Baker and utilizes approximately 24,000 acre-feet of water in the Bakers' farming operations, annually. Through a process described in Section 5.5 – Water Resources, the farming operations (primarily filter irrigation water filter backwash) produce approximately 160 acre-feet of wastewater on an annual basis which is discharged in an evaporation pond. Wastewater from this pond could potentially supply Midway's water needs.

Using the Baker's irrigation return flow water would require installing approximately 2-mile of piping in order to access the water source.

New Deep Well at Project Site Lastly, the Midway project could drill a new 1,500-foot well to access the lower aquifer where the water has less TDS than the existing CalPeak Panoche well (1,200 ppm as compared to 3,400 ppm TDS). The well would be located adjacent to the RO unit in order to limit the amount of piping needed.

3.4.9.2 Water Quality

Table 3.4-3 summarizes the expected TDS concentration for each source.

TABLE 3.4-3
SUPPLY WATER ANALYSIS

Source	TDS (ppm)
1. The existing CalPeak Panoche Plant Well (Upper Aquifer Groundwater)	3,400
2. Irrigation Return Flow – Agricultural Backwash Pond	190
3. New Deep Well at Project Site (Lower Aquifer Groundwater)	1,090

3.4.9.3 Water Treatment

The Midway site has included in its design a RO unit through which the supply water would first be processed. After being processed through the RO unit the water would then be demineralized. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required DI water. This will involve use of rented mobile demineralizer trailers that will reside on a pad (See Figure 3.4-1). The rental company will perform regeneration of these units at their facility.

The DI water produced by the trailers will meet the following water quality limits required by PWPS standards:

* Total Solids	<1.0 PPM	ASTM D1888
* Sodium	<0.10 PPM	ASTM D2791
* Silica	<0.02 PPM	ASTM D859
* Conductivity	<1.0-1.5 Micromho/cm	ASTM D5391

Demineralized water will be stored in two (2) 75,000-gallon tanks. A forwarding system will be utilized to provide this DI water to the gas turbines within the required flow and pressure limits.

3.4.9.4 Waste Water Treatment Systems

The Midway project will utilize two different systems to manage wastewater.

3.4.9.4.1 Treatment and Disposition of Liquid Process Wastes

Wastewater generated by the RO process will be conveyed by gravity to an on-site, lined evaporation pond (which can accommodate 30 acre-feet per year) on the east side of the Midway site. The average wastewater generation rate that will require disposal is expected to be approximately 25gpm. Residue from this pond would be disposed of in a permitted landfill.

3.4.9.4.2 Plant Drains and Wash-down

A sump will collect oils and chemicals that could drain from the gas turbine exhaust floor drains, the generator floor drains, the transformer containment area, the equipment wash down areas, and the ammonia storage. Oil leakage from equipment is expected to be minimal. Composition will be similar to standard parking lot impacts. Nonetheless, all equipment that has potential for significant leakage of oil or hazardous chemicals, such as glycol coolants, will be located within spill containment basins which would also flow into the sump. A sump pump will convey this oily waste water/chemical drain water to an on-site 4,700 gallon storage tank. Waste from the storage tank will be pumped out and moved offsite. The storage tank will include level and leak detection instrumentation.

3.4.9.4.3 Domestic/Sanitary Wastewater

The project will not require sanitary waste systems. Portable sanitary units will be delivered and maintained by a local service company.

3.4.9.4.4 Stormwater Drainage

Rainfall from the project site will be predominantly drained by sheet flow and efforts will be made to maintain the integrity of the existing drainage patterns, wherever possible. Based on the final site-grading plan, some isolated areas may require underground stormwater collection and drainage piping.

3.4.10 Waste Management

The project will generate a variety of non-hazardous and hazardous wastes during construction and operation (see Tables 3.4-4 and 3.4-5). These include liquids and solids from the wastewater system (discussed in Section 3.4.9.4), replaceable parts, rags, and other waste materials and chemicals produced during construction and operation.

Handling of hazardous wastes is discussed in Section 3.4.

3.4.10.1 Solid Waste – Non-Hazardous

3.4.10.1.1 Construction Waste

Inert solid wastes resulting from construction activities may include lumber, excess concrete, metal and scrap, and empty non-hazardous containers. Management of these wastes will be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup of wastes with disposal at local Class III landfills. The total amount of solid waste generated by construction activities has been estimated to be similar to that for normal commercial construction. It is not expected to result in a significant impact on public health or to cause adverse effects on local landfill capacity. Table 3.4-4 provides an overview of the waste streams anticipated for the construction phase of the project. For projected quantities refer to Section 5.14.

3.4.10.1.2 Operations Waste

Inert solid wastes generated at the facility during operation are predominantly routine maintenance wastes. Scrap materials such as paper, packing materials, glass, metal, and plastic will be segregated and managed for recycling. Non-recyclable inert wastes will be stored in covered trash bins in accordance with local ordinances and picked-up by an authorized local trash hauler on a regular basis for transport and disposal in a suitable landfill in the area. Table 3.4-5 provides an overview of the waste streams anticipated for when the project is operational. For projected quantities refer to Section 5.14.

3.4.10.2 Liquid Wastes – Non-Hazardous

Non-hazardous liquid wastes produced in the facility consist of wastewater system wastes. Handling and disposal of these wastes is discussed in the Waste Management Section (Section 5.14) as well as the Hazardous Materials Handling Section (Section 5.15) of this application. Skim oil collected from equipment drains and other liquids drained from equipment will generally be treated as hazardous due to possible heavy metals content.

TABLE 3.4-4
SUMMARY OF CONSTRUCTION WASTE STREAMS AND MANAGEMENT

Waste Stream	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Disposal Method
Paper, wood, glass, and plastics from packing materials, waste lumber, insulation, and empty non-hazardous containers	Non-hazardous	Intermittent	None	Weekly collection for recycling and/or disposal at a Class III Landfill
Residual Solids from Evaporation Pond (dirt and concrete particles)	Non-hazardous	One time at end	None	Excavate at end of construction and spread onsite
Empty hazardous material containers-drums	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recondition, recycle, or waste disposal at Class I Landfill
Used and waste lube oil during Combustion Turbine Generator (CTG) Lube Oil Flushes	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recycle
Spent batteries; lead acid	Hazardous	Every 90 days	Store for < 90 days	Recycle
Spent batteries; alkaline type, sizes AAA, AA, C, and D	Recyclable	Every 90 days	Store for < 90 days	Recycle
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Periodically pumped to tanker truck by licensed contractors	None	Collection by licensed contractor (minimum) for offsite treatment/disposal
Stormwater	Non-hazardous	Intermittent	None	Discharged as sheet flow from the site
Waste oil including used motor oil, transmission fluid, hydraulic fluid, and antifreeze	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Waste paint, thinners, and solvents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Oily rags	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycled
Oil Absorbents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility

TABLE 3.4-5
SUMMARY OF OPERATIONS WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream.	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Treatment Off-Site
Paper, wood, plastic, cardboard	Non-hazardous	Intermittent	None	Weekly collection for recycling and /or disposal at a Class III Landfill
Empty hazardous material containers	Hazardous	Every 90 days	Store for < 90 days	Recondition or recycle
Used hydraulic fluids, oils, grease, oily filters from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle
Used Air Filters from the CTG	Non-hazardous	Every 5 years	None	Recycle
Spent batteries	Hazardous	Intermittent	Store for < 90 days	Recycle
Spent selective catalytic reduction (SCR) catalyst	Hazardous	Every 25,000 hours of operation	N/A	Recycle
Oily rags from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Hazardous waste disposal facility or recycled
Oily Absorbent from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle or hazardous waste disposal facility
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Continuous	Continuous	Collection by licensed contractor (minimum) for offsite treatment/disposal
CTG periodic operational chemical cleaning	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility (by licensed subcontractors)
RO evaporation pond residue	Non-hazardous	Once every 5 years (assumes 400 hours/year)	NA	Landfill

3.4.11 Management and Disposal of Hazardous Material and Hazardous Waste

The Project will implement a Hazardous Materials Management Program (HMMP) developed for Midway which will include procedures for: hazardous materials handling, use and storage; emergency response; spill control and prevention; employee training; and reporting and record keeping. The

Midway HMMP program is based off plans which have been developed for the nearby CalPeak Panoche plant. The HMMP will be developed and implemented prior to commercial operation. The content will be very similar to the plans for the existing CalPeak Panoche plant adjacent to Midway. The procedures outlined in the HMMP are in accordance with all applicable LORS.

3.4.11.1 Chemical Management

There will be a variety of chemicals stored and used during the construction and operation of Midway. The storage, handling, and use of all chemicals will be conducted in accordance with applicable LORS.

- Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to retain leaks and spills. Secondary containment area design will allow a full-tank-capacity spill. For multiple tanks located within the same area, the capacity of the largest single tank will determine the volume of the area and drain piping. Volatile chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors.

- The aqueous ammonia storage and unloading area will have spill containment and ammonia vapor detection equipment. Aqueous ammonia will be transported and stored in two 12,000-gallon tank onsite, as a 19.5 percent solution, by weight.

- Eyewash stations will be provided in the vicinity of all chemical storage areas.

- Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for small-scale spill cleanup.

3.4.11.2 Hazardous Wastes

Table 3.4-4 Summary of Operation Waste Streams and Management lists the types of wastes to be generated during operation of the project. These wastes will be managed in accordance with applicable LORS and consistent with the implementation of the HMMP developed for Midway, and carried out similarly to that for the existing CalPeak Panoche Peaker plant. Several methods will be used to properly manage and dispose of hazardous wastes generated by Midway.

- Workers will be trained to handle hazardous wastes generated at the site.

- Waste lubricating oil will be recovered and reclaimed by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill.

- Spent SCR and oxidation catalysts will be reclaimed by the supplier or disposed of in accordance with regulatory requirements.

- When applicable, contractors working on site will be responsible for managing and disposing of their generated waste streams.

- The only chemical cleaning wastes are the detergent solutions used during turbine washing. These wastes, which contain primarily dust from the air and potentially compressor blade metals, will be temporarily stored onsite in portable tanks, monitored, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements.

3.4.12 Emissions Control and Monitoring Equipment

CEMS equipment will record NO_x and CO emissions and alert operators of deviations from design levels. The following subsections describe the emissions controls, emissions data, and emissions impacts. Applicable regulations are addressed in the Air Quality Section (5.2) and the Air Quality Technical Report (Appendix I) of this application. Emissions that will be controlled include:

- Oxides of nitrogen (NO_x)
- Carbon monoxide (CO)
- Particulate matter (PM)
- Volatile organic compounds (VOCs)
- Oxides of sulfur (SO_x)

3.4.12.1 NOx Formation

NO_x is a general term pertaining to compounds including nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen. Nitrogen oxides are produced from burning fuels, including gasoline, diesel, and coal under high temperature. In the typical combustion process, temperature distribution is erratic. NO_x production is greatest where the highest temperatures exist. Nitrogen oxides react with volatile organic compounds (VOC) to form ozone in the presence of sunlight.

3.4.12.2 CGT Water Injection for NOx Emission Controls

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O2. The formation of NOx in the combustor is primarily a function of flame temperature. By injecting water into the combustor the flame temperature is reduced thereby limiting the formation of thermal NOx.

3.4.12.3 Post Combustion NOx Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

The SCR process will use 19 percent aqueous ammonia (NH_3) as the reducing agent to activate the catalyst. Diluted ammonia vapor will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction with the catalyst will reduce NO_x to nitrogen and water. Ammonia slip, or the concentration of unreacted ammonia in the exiting exhaust gas, will be limited to 10 ppmvd, referenced to 15% O_2. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors.

The plant will have two (2) SCR systems and an aqueous ammonia system. The main components of the aqueous ammonia system are as follows:

- One (1) Ammonia Unloading Station with an Unloading Pump skid
- Storage Tank(s) (2@12,000 gallon)
- One (1) Ammonia Forwarding Pump skid
- Two (2) Ammonia Injection Control Skids that include:
  - Dilution air fan(s)
  - Electric air heater(s)
  - Ammonia flow control valve(s)
  - Air/ammonia mixing vessel

3.4.12.3.1 Operation

Aqueous ammonia is forwarded from a storage tank to each SCR ammonia injection control skid via the forwarding pump skid. The control skid meters the amount of ammonia to be injected into the SCR based on the CEMS emissions monitoring system and adjusts the ammonia flow control valve as required. The ammonia injection skid is controlled via an independent Programmable Logic Controller (PLC).

Pressurized air is used as the dilution and injection medium to deliver the ammonia from the mixing vessel into the SCR. This air is provided by the dilution air fans and flows through an electronic heater before reaching the mixing vessel. Once the heated dilution air reaches the mixing vessel it combines with the atomized aqueous ammonia and vaporizes the ammonia for injection into the SCR. The ammonia will be atomized into the mixing vessel through the ammonia spray nozzles. The heated air ensures that the ammonia is completely vaporized and does not damage the SCR.

The SCR system will limit NOx emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. Refer to Section 5.2, Air Quality, for information on stack flow rates, temperatures and NOx emission rates over the full range of ambient conditions considered during normal operation (with either one or two CGT's running at base load).

A CEMS monitor will be utilized to monitor NOx levels at the stack exit.

3.4.12.4 CO and VOC Emissions

CO forms when hydrocarbons are burned in an oxygen deficient or low temperature atmosphere. The FT8-3 SwiftPac units will limit CO levels at the exit of each CGT to 26 ppmvd referenced to 15% O_2. The CO oxidation catalyst in the stack will limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2.

VOCs include all unburned hydrocarbons except methane and ethane. They remain in the exhaust when part of the incoming has insufficient contact with oxygen to support full combustion. The FT8-3 SwiftPac

3.4.12.5 Particulates

Particulate PM_{10} and PM_{25} emissions are minimized through selection of natural gas as the exclusive fuel. Combustion of natural gas produces minimal particulate emissions compared to other fuels.

A significant fraction of the particulate matter in stack emissions consists of compounds of ammonium and sulfate. Sulfur compounds, contained in small quantities in natural gas, are oxidized in the gas turbine combustors to form CO_2, H_2O, SO_2, and SO_3. While most of the fuel sulfur is converted to SO_2, approximately 1.5 percent is converted to SO_3, which then combines with water in the exhaust to form H_2SO_4, which is defined as a condensable particulate. Passing through the SCR, some of the ammonia injected for NO_x control combines with H_2SO_4 to form ammonium sulfate and ammonia bisulfate, which form very fine solids which meet the air quality definition of noncondensable PM_{10}. The remaining SO_2 is emitted as a gas.

Inlet air filtration removes particulate matter present in the air, thus preventing it from entering and being exhausted by the turbine.

3.4.12.6 Emission Monitoring

A Continuous Monitoring System (CEMS) will be installed at the stack of both CTG units. The system will sample, analyze and record the concentrations of CO, NOx, O_2, and CO_2 in the flue (stack) gas. The system will provide a record of emissions data and transmit alarm signals to the control room when the emissions levels approach or exceed pre-selected limits. The CEMS will comply with 40 CFR 75 requirements.

3.4.13 Fire Protection and Safety System

The Midway project fire protection and safety systems are designed to limit personnel injury, property loss, and plant downtime caused by a fire or other event. The systems are designed in accordance with:

- Federal, State and Local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- National Fire Protection Association (NFPA) standard practices

The subsections below provide a detailed description of the fire protection and safety systems.

3.4.13.1 Fixed Fire Protection Systems

Each of the Pratt & Whitney Power Systems FT8 model CTG units comes with independent fire protection systems consisting of detection and suppression subsystems that meet the intent of National Fire Protection Association (NFPA) 37, *Standard for Installation and Use of Stationary Combustion Engines and Gas Turbines,* as modified by NFPA 850, NFPA 12, *Carbon Dioxide Extinguishing Systems,* and NFPA 72, *Fire Alarm Code.*

The two (2) CTG enclosures are protected with independent high pressure CO_2 fire suppression systems. The CO_2 tanks, solenoids, and manifolds are located outside each enclosure, with the system's control module located in the unit's Control House. The Generator and the Control House enclosures are protected by portable fire extinguishers that are located at the enclosures.

The CTG Units are also protected by a fire shut-off valve in the fuel line to each engine, outside each CTG enclosure. This valve is wired directly into the CTG unit fire protection panel in the Control House and closes upon a fire trip. It must be reset manually and locally.

There is a CTG unit fire protection system panel that monitors and displays the status of all fire system inputs and provides outputs to activate audible and visual alarms, discharge suppression systems, close fuel fire safety valves, and signal turbine and unit control systems for required responses. The system operates on 24 volts DC and contains its own internal power supply and battery backup. Automatic fire detection is provided by rate compensated thermal detectors in each CTG enclosure. Facilities for manual (electric and mechanical) initiation of the fire systems are also provided. Each control house is monitored by smoke detectors. The CTG fire protection system shall provide automatic notification to a station that is continuously manned.

Immediately upon actuation of a CTG enclosure suppression system, the CTG enclosure secondary air supply fans are de-energized and the gas fuel supply shut off via manually reset fire safety valves located outside the CTG enclosures. A 20-second time delay permits rundown of the gas turbine and generator before a solenoid valve releases the pressurized CO_2 into its distribution manifold. A pneumatic cylinder, actuated by the pressurized CO_2, releases spring loaded dampers to close off the enclosure ventilation air supply. Simultaneously, a series of nozzles floods the CTG enclosures to a 34% CO_2 concentration, sufficient for inverting the combustion process. The CO_2 supply to the manifold is fed from pressurized tanks. The first set of tanks is quick emptying, while the second set of slow-emptying tanks maintains the 5% level required to overcome dilution from air leakage. This CO_2 concentration is maintained for approximately 30 minutes, sufficient time to allow combustibles to cool below their auto ignition temperatures. A CO_2 status display board is provided near each protected CTG enclosure entry to visually indicate the status of the fire protection system (i.e. CO_2 armed or disarmed).

Disarming may be accomplished by disabling the CO_2 suppression system, either electronically by means of a key switch and/or blocking the flow of CO_2 by a manually activated safety block valve in the CO2 piping discharge system. When disarmed the detection alarm system will remain active while the CO2 discharge capability will be disabled. Continuous signals (supervisory) are sent to the monitoring system notifying the operator while the system is disarmed.

Additional safety features include a suppressant release delay and audible and visual alarms inside and outside the CTG enclosures.

Each CTG enclosure is also provided with a resistance type combustible gas detection system. When the gas concentration reaches a 20% lower explosive level (LEL), the gas hazard alarm will be displayed in the CTG unit fire protection panel and warning alarms will be activated at the CTG enclosure. When a 60% LEL level is reached an automatic trip of the fuel and gas turbine will be initiated. The CTG enclosures ventilation system will remain operational to reduce the gas hazard.

3.4.13.2 Fire Alarm and Detection

The main fire control panel will be located in the Midway Control Room and will annunciate activation of a fire protection/detection system by location zones. The alarms will also be monitored in the remote CalPeak Power control room. The panel operates on 120 VAC power through the UPS system. The alarm and detection system is designed to comply with NFPA 70 and 72.

Local building fire pull boxes and audible alarms will be provided. Flashing lights will be used in addition to audible alarms in high noise areas.

3.4.13.3 Portable Extinguishers

Hand held CO_2 and dry chemical extinguishers will be located throughout the project area, with size, rating, and spacing in accordance with NFPA 10. Handcart CO_2 extinguishers will be provided as needed for specific hazards.

3.4.13.4 Miscellaneous Fire Safety Items

All materials of construction used in the plant will be free of asbestos and will meet the required fire and smoke rating requirements of NFPA 255.

Plant management will coordinate with the local County fire marshal and fire department to provide an appropriate orientation to the project and its operating and emergency procedures for emergency personnel.

3.4.14 Plant Auxiliaries

3.4.14.1 Lighting

Lighting will be required for safe and efficient operation in a number of areas. These include:

- Outdoor equipment platforms and walkways
- Transformer areas

To avoid intrusion on sensitive areas, outdoor lighting will be directed downwards and towards the interior of the plant.

Emergency lighting from DC battery packs will be provided in areas of normal personnel traffic to permit safe egress from the area in case of failure of the normal lighting system. In major control equipment areas and electrical distribution equipment areas, emergency lighting will be sufficient to allow equipment operation and to facilitate reestablishment of auxiliary power.

FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The Midway exhaust stacks are elevated 50 feet above grade. Since the stacks are below the 200 feet limit and there is no airfield in close proximity to the site, the exhaust stacks will not require obstruction lighting.

3.4.14.2 Grounding and Lightning Protection

The electrical system may experience unit ground potential rise due to ground fault, lightning strike, or switching surge. This constitutes a hazard to site personnel and electrical equipment. A ground grid grounding system to permit dissipation of ground fault currents and minimize ground potential rise will be installed. The grounding grid will control step and touch potentials in accordance with IEEE Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

3.4.14.3 Cathodic Protection

Cathodic protection may be provided, using an impressed current or buried anode system to prevent corrosion of buried carbon steel piping and structures. Protective coatings are applied as primary protection and to minimize cathodic protection current requirements. The requirement for a cathodic protection system will be determined during detailed design.

3.4.14.4 Freeze Protection

Midway design incorporates insulation for all pipes less than 2-inches in diameter in order to protect from freezing.

3.4.14.5 Programmable Logic Controller

The programmable logic controller (PLC) provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems. It is described in more detail in Section 3.9 in which facility operations are detailed.

3.4.14.6 Plant Instrument and Service Air System

A compressed air system will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include an air compressor skid with two (2) 100 % capacity oil flooded rotary screw compressors and a dryer skid with twin desiccant type heatless regenerative air vessels.

3.5 CIVIL/STRUCTURAL FEATURES

This section describes the buildings, structures, and other civil/structural features that will constitute the facility as shown on the Site Plan.

3.5.1 Power Block

The Midway project will consist of two power blocks and associated BOP auxiliary equipment. Each power block will consist of one (1) FT8-3 SwiftPac Combustion Turbine Generator unit, SCR, and exhaust stack. Both power blocks will feed one (1) one generator step-up transformer. Corresponding auxiliary mechanical and electrical equipment will be located adjacent to the power blocks. Refer to Figure 3.4-1 for a general arrangement of equipment.

The CTG units will be supported on a reinforced concrete foundation at grade. Individual reinforced concrete pads at grade will be used to support the BOP mechanical and electrical equipment. Foundation pilings will be used for major equipment and building foundations if required. All equipment will have seismic anchoring that meets or exceeds requirements for CBC Seismic Zone 4.

3.5.2 Exhaust Stacks

Each CTG unit will be provided with one self-supporting steel stack. The stack will be 15 feet in diameter and 50 feet tall and will include associated appurtenances, such as sampling ports, exterior ladders and side step platforms.

3.5.3 Buildings

The plant buildings will include two (2) primary control enclosures (one for each SwiftPac unit and one (1) secondary control enclosure. Building dimensions are shown in Table 3.4-1. All of the enclosures will be supported on mat foundations or individual spread footings.

3.5.4 Storage Tanks

The Midway project will utilize two (2) DI Water Storage Tanks (75,000 gallons each) and one (1) Raw Water Storage Tank (75,000 gallons). Each of these three storage tanks will be approximately 23' in diameter and 24' high, and will be supported by a concrete ringwall foundation. The Midway project will also utilize two (2) Aqueous Ammonia Storage Tanks (12,000 gallons each).

3.5.5 Roads

The site will be accessed from West Panoche Road via a new entrance road shown on Figure 3.4-1. The access road network serving the project will consist of a graded gravel entrance road extending for approximately 250 feet to an approximately 1,150-foot asphalt turn-around adjacent to the plant.

3.5.6 Site Security Fencing

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.5.7 Site Grading and Drainage

The plant site will consist of a graded gravel entrance road, parking area, and an asphalt road turn-around adjacent to the plant equipment. Stormwater will continue to run off the site as sheet flow. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of the site. This plan will be utilized at the site to control and minimize stormwater during the construction of the facility. The plan will use best management practices such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas.

3.5.8 Site Flood Issues

According to the Federal Emergency Management Agency (FEMA), the site is within the 100-year flood plain. The site will be raised one foot in conformance with the Fresno County Ordinance Title

15 Flood Hazard Areas to ensure that in the event of a 100-year storm, the site and equipment is not subjected to any flood damage.

3.5.9 Earthwork

Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stockpiled at designated locations using proper erosion protection methods. Any excess material will be removed from the site and disposed of at an acceptable location. If contaminated material is encountered during excavation, its disposal will comply with applicable LORS.

The site is currently a storage yard. If needed, fill will be imported to establish finish grade. Finish grade will be approximately one foot higher than existing grade. The quantity of fill for the project is approximately 9,500 cubic yards all of which will come from the site, as described in the Appendix L.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations for Seismic Zone 4. For slopes requiring soil reinforcement to resist seismic loading, geogrid reinforcement will be used for fills and soil nailing for cuts. Slopes for embankments will be no steeper than 2:1 (horizontal:vertical). Construction will be at one foot above existing grade, which is fairly level; therefore major cuts and fills are not anticipated.

Areas to be backfilled will be prepared by removing unsuitable material and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction. Structural fill supporting foundations, roads, and parking areas will be compacted to at least 95 percent of the maximum dry density as determined by American Society for Testing Materials (ASTM) D-1557 as described in Appendix L, Geotechnical Report. Embankments, dikes, bedding for buried piping, and backfill surrounding structures will be compacted to a minimum of 90 percent of the maximum dry density. Backfill placed in remote and/or unsurfaced areas will be compacted to at least 85 percent of the maximum dry density.

Where fills are to be placed on subgrades sloped at 6:1 (horizontal:vertical) or greater, keys into the existing subgrade may be provided to help withstand horizontal ground accelerations.

The subgrades (original ground), subbases, and base courses of roads will be prepared and compacted in accordance with California Department of Transportation (Caltrans) standards. Testing will be in accordance with ASTM and Caltrans standards.

3.6 ELECTRICAL INTERCONNECTION

The Project will interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line (see Figure 3.6-1). The tie line connecting the existing CalPeak Panoche Plant to PG&E's system is already sized to carry the output of the Midway plant. Midway will construct a 300-foot generator tap line from Midway to the first point of interconnection, the existing CalPeak Panoche Peaker tie line. The transmission line will be located entirely on either the Project site or the PG&E substation property.

3.6.1 Electrical Interconnection Points

The 115 kV transmission line for the existing CalPeak Panoche Plant is a direct intertie between the CalPeak Panoche switchyard and PG&E's Panoche Substation. The existing CalPeak Panoche Generator Tie line which connects the Peaker Plant to the 115 kV switchyard at PG&E's Panoche Substation is the point of interconnection for the project. Although the Midway project will be interconnected to the CalPeak Panoche transmission line, each project will have independent breakers for isolation from the PG&E system. Neither plant will be dependent on the other for its transmission interconnection.

3.6.2 Transmission Line Specifications

The proposed 115kV lines will be overhead conductor design, supported by wooden poles, with a transmission line span of 300 feet. There will be two dead-end take off structures, one existing at the PG&E Panoche substation and the other proposed as part of the Midway project. The line will originate at the main step-up transformer located at the Midway site and terminate at the tap point where it will intersect with the tie-line between the existing CalPeak Panoche Plant and the PG&E Substation.

3.6.2.1 Conductor

The generator tap line connecting the Midway project to the tap point at the CalPeak Peaker site will be constructed using 715.5 kcmil aluminum or equivalent.

3.6.2.2 Ground Wire

The transmission line will have shield or ground wires in place. The location of the shield wires in relation to conductors shall be in accordance with best industry practices and determined by the surrounding terrain. The shield wire shall be extra high strength galvanized steel or copper-clad steel as determined by the location and the detailed design.

3.6.2.3 Route

The proposed transmission line will originate from the Midway generator step-up transformer near the western perimeter of the site north of the CTG Units (Figure 3.4-1). The 115kV transmission line will exit from the northwest edge of the project site and run west approximately 300 feet to tie into the existing CalPeak Panoche tie line to the Panoche Substation. Line design will take into account a 90 degree orientation differential between the Midway dead-end structure and the CalPeak Panoche/PG&E tie-line. Intermediate structures will be installed as required.

3.6.2.4 Tie Line Interconnect

In order to interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line, the Midway project will have to rearrange or rebuild to avoid multiple line crossings for the construction of the Project's tie line. This may be done by raising a segment of the PG&E transmission lines in order to accommodate the Midway generator tie lines. Line clearances over roads and under existing lines will conform to all applicable standards and requirements found in the NESC, ANSI STD C2, for such applications.

3.6.2.5 Transmission Structures

The proposed 115kV transmission lines will be overhead conductor design with a transmission line span of 300 feet. There will be one dead-end take off structure on-site. The structure will be at the originating outdoor switchyard located in the new Midway facility. The design of the transmission structures including lines and poles will be coordinated with PG&E in accordance with their specifications.

3.6.2.6 Types

The take off for the dead end structure will be an A frame type. It will be approximately 50 feet high with additional 15-foot lightning masts. The power conductor, the ground, and the shield wire will be attached in accordance with PG&E specifications.

3.6.2.7 Foundations

Foundations will be required for 115kV disconnect switch, 115kV circuit breaker, voltage and current transformers, and outgoing dead end structure. The foundations will be drilled pier concrete foundations with the necessary anchor bolts. The dead end structure and, if deemed necessary, any intermediate line supports will have foundations designed to meet seismic criteria applicable to the site.

3.6.2.8 Access to Structures

The entire electrical interconnection phase of the project will be located wholly within the property boundaries of either the project, the CalPeak Panoche Plant, or the PG&E substation. It will originate at the facility outdoor switchyard dead end structure and terminate at the CalPeak Panoche tie line to the PG&E substation. The public will not have access to any portions of the transmission lines or the switchyard.

3.6.3 Midway Transmission System Evaluation

PG&E performed a System Impact Study (SIS), March 2006, and a Facility Study, September 2006, under PG&E's Transmission Owner's Tariff for the Midway plant. The System Impact Study determined the impact on the PG&E system based on power flows on the existing transmission lines and transformers, short circuit duties of the existing transmission facilities and stability of the interconnected system considering various contingencies and fault conditions. The Facility Study outlines mitigation measures for transmission facility overloads.

3.6.3.1 Transmission System Reliability Criteria

The North American Electric Reliability Council (NERC) and the Western System Coordinating Council (WSCC) Reliability Criteria for Transmission System Planning, the Independent System Operator (ISO) and the PG&E Reliability Criteria, will be used in the evaluation of the interconnection of this facility to the transmission system. These criteria will also be utilized in the analysis to insure minimum criteria requirements are adhered to and project objectives are met. The ISO processes will be monitored throughout the transmission system evaluation to insure that any changes to the criteria are considered.

3.7 PIPELINES

The project includes both a natural gas supply pipeline and a water supply pipeline. The natural gas line would tap into an existing PG&E trunkline and would consist of a 6-inch line, approximately 50 feet of which would be off-site and approximately 600 feet on-site. The PG&E trunkline tie in is adjacent to the entrance of the property. The underground water pipeline would consist of approximately 1,200 feet of 3-inch line piped from the CalPeak Panoche site.

3.7.1 Natural Gas Supply Line

Natural gas will be delivered to the plant site from a connection to a PG&E trunk line. A metering and regulator station will be provided on the PG&E right of way northwest of the site. The gas will be metered by PG&E as it enters the project site. Additional flow metering will be provided at each CTG.

3.7.1.1 Pipeline Routes

PG&E will tap the 6-inch gas service line serving the existing CalPeak Panoche Peaker facility approximately 25 feet upstream of the existing meter set, and install 50 feet of 6-inch steel pipeline to a new 6-inch turbine meter set adjacent to CalPeak Power's existing meter set. See Figure 3.4-1 for the location of the meter sets. From the newly installed meter set, approximately 600 feet of gas line would be constructed along the western perimeter of the project site.

3.7.1.2 Buried Pipe

Construction will primarily use an open trench method.

The pipeline will be constructed of carbon steel in accordance with the American Petroleum Institute (API) specifications for gas pipelines or specifications of the ASTM. The pipe will have corrosion-protection coating that is either factory- or field-applied. Joints will be welded, inspected using x-ray, and wrapped with a corrosion-protection coating.

Construction of the natural gas pipeline is described in the following subsections.

3.7.1.2.1 Trenching

The width of the trench is dependent on the soil type encountered and requirements of governing agencies. The optimal dimensions of the trench will be about 18 inches wide and 48 inches deep. For loose soil, a trench of up to 8 feet wide at the top and 2 feet wide at the bottom may be required. The pipeline will be buried with a minimum 36-inch cover. The excavated soil will be piled on one side of the trench and later used for backfilling after the pipe is installed in the trench.

3.7.1.2.2 Stringing

The pipe will be laid out (stringing) on wooden skids along the side of the open trench during installation.

3.7.1.2.3 Installation

Installation consists of:

- Welding, coating, and bending of pipe
- Laying sand or fine soil on the trench floor
- Lowering the pipe string into the trench

Welding will meet the applicable API and ASTM standards and shall be performed by qualified welders. Welds will undergo radio graphical inspection by an independent, qualified radiography contractor. All coatings will be checked for holidays and will be repaired before lowering the pipe into the trench.

3.7.1.2.4 Backfilling

Backfilling consists of returning excavated soil back into the trench around and on top of the pipe, and up to the original grade of the surface. The backfill will be compacted to protect the stability of the pipe and minimize subsequent subsidence.

3.7.1.2.5 Plating

Plating consists of covering any open trenches, for safety purposes, with solid rectangular plates in areas of foot or vehicular traffic at the end of a workday. Plywood plates can be used in areas of foot traffic and steel plates on areas of vehicular traffic.

3.7.1.2.6 Pneumatic Testing

Pneumatic testing consists of plugging both open ends of a pipeline that is to be tested, filling the pipe with air up to a pressure specified by code requirements, and maintaining the pressure for a period of time.

3.7.1.2.7 Clean up

Clean up consists of restoring the ground surface by removing construction debris, grading the surface to its original state, and replanting vegetation.

3.7.1.2.8 Commissioning

Commissioning consists of cleaning and drying the interior of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

3.7.1.2.9 Safety

Safety consists of complying with all applicable CalOSHA, OSHA, and other regulations and standards as well as contractor's specific safety plans for the project, which will address specific pipeline safety issues.

3.7.2 Water Supply Line

Water can supplied to the project from multiple sources but for purposes of this report and data presented we will assume water will be delivered to the plant site from a connection to the existing CalPeak Panoche Peaker Plant well.

3.7.2.1 Pipeline Routes

The water pipeline tying Midway to the existing CalPeak Panoche well would follow the perimeter of the CalPeak Panoche site before turning northwest along the shared property line between Midway and CalPeak Panoche. At the point where the water pipe reaches the north side of the Midway CTG units, prior to the Midway step-up transformer, the line would travel east and north into the Midway Site where it would then tap into the RO unit.

3.7.2.2 Buried Pipe

Construction of the water pipeline, similar to the natural gas line, will use the open trench method. See sections 3.7.1.2.1 thru 3.7.1.2.9 above.

3.8 PROJECT CONSTRUCTION

Construction of the Midway project includes site preparation, foundation construction, erection of major equipment and structures, installation of piping, electrical systems, control systems, and start-up/testing. These construction activities are expected to require approximately 10 months. The schedule commences when the Owner issues a notice to proceed and is completed when the project is commercially operational.

Table 3.8-1 presents the major construction milestones.

TABLE 3.8-1
CONSTRUCION MILESTONES

Activity	Dates
Procure Financing	December 2007 to February 2008
Engineering, Design, Procurement	February to June 2008
Construction	June 2008 to March 2009
Performance Testing	March to May 2009

Per the Power Purchase Agreement and EPC contract, the plant is to be in commercial service by May 1, 2009. Engineering, design, and procurement will commence February 2008 and will be completed by June 2008. Construction is scheduled to occur over a 10 month period after the notice to proceed is received. Construction will be completed by March 2009. Performance testing will be conducted between the end of construction and May 1, 2009 when commercial operation will begin.

3.8.1 Project Schedule and Workforce

The detailed work plans, logistical studies, project procedures, schedules and administrative control systems developed to perform, monitor, and control the Midway project and its implementation will all be prepared in accordance with the CEC regulations and applicable LORS.

The general sequence of work will proceed as follows:

- Receipt of the Final Decision from the CEC
- Close project financing

- Issuance of a notice to proceed by the Owner to the contractor
- Development of the project schedule incorporating items required by the CEC
- Commencement of engineering and procurement activities
- Site preparation and construction mobilization
- Installation of underground piping and electrical systems
- Construction of concrete foundations
- Installation of power-generating equipment
- Installation, interconnection, and testing of aboveground piping and electrical systems
- Installation, interconnection, and testing of instrumentation and control devices and distributed control system

Construction will conclude with start-up and testing activities, which will continue until the entire facility is capable of reliable operation within permit requirements and good operating practice. All of the systems and subsystems in each unit will be tested and adjusted, first individually and then combined with others, before the project is deemed ready for startup.

The Midway project will be declared commercially operational after successful completion of plant start-up activities, and after appropriate testing has been completed. Facility optimization activities may continue after commencement of commercial operation.

Attachments A and B present the projected manpower required for construction. Required manpower averages approximately 75 people per month – for a total required 743 man-months during the 10 month construction period. Monthly required manpower peaks at 110 people. Attachment B specifically illustrates the manpower breakdown by craft.

3.8.2 Execution Plans – Engineering and Construction Phases

3.8.2.1 Engineering and Pre-Construction Mobilization

Engineering activities will begin following the California Energy Commission (CEC) Final Approval of the project, which is anticipated by December 2007. Staff from the engineering and construction groups will work together in the same office to prepare a safe, qualitative, cost effective, and sequentially effective plan for the project. The initial focus will include the purchase and delivery of engineered equipment and specialty, long-lead material. Facility design will include early milestones to complete the civil, structural, and mechanical equipment aspects of the project. As the ground breaking occurs and site grading commences, the design and procurement continues to support the overall schedule and reliability of the final project. Contractor is anticipated to mobilize within four months after notice to proceed.

3.8.2.2 Construction Facilities

Mobile trailers or similar suitable facilities (e.g., modular offices) will be used as construction offices for owner, contractor, and subcontractor personnel.

3.8.2.3 Construction Parking

Construction parking will be within existing site boundaries. Construction access will be from West Panoche Road, via the access road. There will be adequate parking space for construction personnel and visitors during construction on site.

3.8.2.4 Laydown and Storage

As part of the site access road construction previously described, an adjacent gravel laydown area will also be constructed (see Figure 3.4-1). In addition to the laydown area, other areas within the site boundary may also be used as off-load and staging during construction. All laydown and storage areas are wholly within the site perimeter and once construction is complete will be within site security perimeter fencing. Post-construction, the gravel laydown area will be used for parking as needed.

3.8.2.5 Emergency Facilities

The General Contractor will have a Safety Coordinator who will prepare a site-specific safety plan. Emergency services will be coordinated with the County of Fresno Fire Department and local hospital in the City of Mendota. An urgent care facility will be contacted to set up non-emergency physician referrals. First aid kits will be provided in the construction offices and regularly maintained. At least one person trained in first aid will be part of the construction crew. In addition, all foremen and supervisors will be given first aid training.

3.8.2.6 Construction Facilities

During construction, temporary utilities will be provided for the construction offices, laydown area, and the project site.

Temporary construction power will initially be provided by using diesel- and gas-powered generators. Eventually, temporary con

Water trucks and potable water delivery will initially provide construction water. As the project matures and the build-out of water wells is completed, the onsite water wells will then be used as the source of construction water.

Portable toilets will be provided throughout the site during construction.

3.8.2.7 Site Services

The General Contractor will provide the following site services:

- Environmental health and safety training
- Site security
- Site first aid
- Construction testing (e.g., nondestructive examination, soil compaction)
- Site fire protection and extinguisher maintenance
- Furnishing and servicing of sanitary facilities
- Trash collection and disposal
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations

3.8.2.8 Construction Equipment and Materials Delivery

Materials and supplies will be delivered to the site by truck. Truck deliveries of construction materials and equipment will generally occur on weekdays between 6:00 a.m. and 6:00 p.m., however, some larger heavy load deliveries may be delivered outside those hours. Site access will be controlled for personnel and vehicles.

3.9 FACILITY OPERATIONS AND MAINTENANCE

This section discusses operation and maintenance procedures that will be followed by the Midway staff to ensure safe, reliable, and environmentally acceptable operation of the power plant, transmission system, and pipelines. Additional information will be provided in the attached appendices.

3.9.1 Introduction

Midway will require approximately 2 full time employees. Plant operations will be directed from an existing and remote control room located in San Diego, California. All system equipment will be controlled through PLC's utilizing control integration software and the project controls will be integrated into this proven control system.

3.9.2 Power Plant Facility

The Midway plant is designed as a simple cycle peaking facility with two Swiftpac units. Each unit consists of two FT8-3 Gas Turbines with power turbines and a single generator. The project will be designed to emphasize efficiency and flexibility.

3.9.2.1 Peaker Plant Operation

The plant will be operated to provide its maximum available electrical output during the periods when the demand for electricity is greatest. As a peaking facility, the plant is contracted and will acquire all permits to operate a maximum of 4,000 hours per year. Midway expects actual operations under normal conditions to be substantially less than contracted hours. Plants with similar operation parameters in California typically operate less that 400 hours annually. The plant will be dispatched by PG&E in accordance with their economic dispatch procedures. The project equipment will be integrated with a CalPeak Power plant performance monitoring program that allows plant staff to make critical decisions as to when the equipment performance has deteriorated to the extent requiring corrective action. This program also allows the plant staff to accurately determine the cost of electrical production. This ability in conjunction with an experienced and adaptable staff will allow the plant to be operated and maintained in the most efficient method possible.

Planned maintenance will be coordinated to coincide with periods of low power demand on the California Independent System Operator (CAISO) system.

3.9.2.1.1 Annual Operating Practices

Generally, the plant will be operated to provide its maximum availability when the demand for electricity is highest. Planned maintenance will be coordinated with demand fluctuations so that outages occur during periods of low demand. Normally, this work will be planned during non-peak periods when electrical demand is low and must be approved by PG&E and the California Independent System Operator

3.9.2.1.2 Operation with Seasonal Variation in Ambient Temperature

Unit output is sensitive to the temperature and density of the ambient air taken into the CTG inlet and used in the combustion process. The temperature and humidity of the air ingested into the gas turbine inlets affect power output. The gas turbine will be equipped with evaporative coolers that will be operated when needed to enhance the power output of the gas turbines. Evaporative coolers will also reduce the inlet air temperatures whenever the ambient temperature is higher than 60°F.

3.9.2.1.3 Startup and Shutdown

The typical time required for startup is approximately 10 minutes. The PG&E contract allows for a maximum of 365 startups and shutdowns per unit in a one-year period. Plants with similar operating parameters in California typically have less than 50 startups and shutdowns annually.

3.9.2.2 Control Philosophy

The control system will consist of a state-of-the-art, integrated, microprocessor-based PLC using control integration software. The control system will provide for startup, shutdown, and control of plant operation limits and will provide protection for the equipment.

- Interlock and logic systems will be provided via hard-wired relays, and/or PLCs.
- Process switches (i.e., pressure, temperature, level, flow) used for protective functions will be connected directly to the PLC and the protective system.

3.9.2.3 Degree of Automation

The plant will be designed with automation where practical in order to reduce the required actions performed by operating personnel. Through subsystem automation and use of the PLC, the number of individual control switches and indicators that confront the operator will be greatly reduced. This will reduce the complexity and size of the main control room workstations and panels.

3.9.2.4 Centralized Control

The majority of the equipment that is required to support the operation of the plant will be located in the control and electrical equipment rooms. The control room contains the PLC CRT-based operator workstations and the auxiliary control panels. In addition, the control room contains the alarm, utility, and log printers.

Local control panels or stations will be furnished only where operator attention is required to set up a system for operation, or where the equipment requires intermittent attention during plant operation. Main control room indicators and control functions will only be duplicated for those variables critical to plant availability.

All of the control processes furnished on the local control panels and central control system will be mirrored in the San Diego operations control center. The plant will have the capability of being operated locally or from the remote location in San Diego. The remote operation will be transferred to the San Diego control center via T-1 line and internet service and will have redundant systems provided by a telephone dial up connection.

3.9.3 Transmission System Operation and Maintenance

Midway will be responsible for the maintenance, inspection, and normal operation of the new 300-foot 115kV interconnecting transmission line in agreement with PG&E and ISO protocols. Operation of the electrical interconnection facilities will be locally controlled at the new generating plant. Control and protection equipment at the plant and within the PG&E switchyard will monitor and control the safe operation of the line, and will automatically trip the plant (or a portion of it) and/or the line in the event of a fault. Midway will have continuous access to all of the electrical interconnection facilities in the event of an emergency.

The control, protection, and metering equipment for the interconnection will be tested for proper operation. The protection and metering equipment will be calibrated and tested approximately every 12 months in accordance with the Midway and PG&E procedures. Inspections of the transmission line and structures are anticipated to occur every 6 to 12 months. Periodic cleaning of the transmission line and switchyard insulators and bushings may be required to remove contamination. The cleaning will be performed based on visual inspections scheduled by plant and switchyard operating personnel. Washing operations will consist of spraying insulators with deionized water through high-pressure equipment mounted on a truck.

3.9.4 Pipelines

PG&E will own the natural gas pipeline from PG&E Gas Line 2 through the outlet of the project meter run. Maintenance of this fuel gas supply line will be performed by PG&E in accordance with applicable Federal Energy Regulatory Commission (FERC) and U.S. Department of Transportation (DOT) regulations. This piping system will receive periodic inspections as part of PG&E's pipeline maintenance program.

The water line will be owned by Starwood Power-Midway, LLC. The system will receive periodic inspections as part of Midway's maintenance program.

3.10 SAFETY, AVAILABILITY, AND RELIABILITY

3.10.1 Safety Precautions and Emergency Systems

Safety precautions and emergency systems will be implemented as part of the design and construction of the plant to ensure safe and reliable operation of project facilities. Administrative controls will include classroom and hands-on training in operating and maintenance procedures and general safety items, and a well-planned maintenance program. These will work with the system design and monitoring features to enhance safety and reliability.

Safety, auxiliary, and emergency systems will consist of lighting, grounding, DC backup for controls, fire and hazardous materials safety systems, security systems, and natural gas, steam, and chemical safety systems. The plant will include its own utilities and services such as plant and instrument air and fire suppression.

3.10.1.1 Safety Precautions

3.10.1.1.1 Worker Safety

Midway will implement programs to assure that compliance with federal and state occupational safety and health program requirements is maintained. In addition to compliance with these programs, Midway will identify and implement plant specific programs that effectively assess potential hazards and mitigate them on a routine basis.

3.10.1.1.2 Hazardous Material Handling

Hazardous materials will be stored and used at Midway during both construction and operation. Design and construction of hazardous materials storage and dispensing systems will be in accordance with applicable codes, regulations, and standards. Hazardous materials storage areas will be curbed or diked to contain spills or leaks.

Potential hazards that are associated with hazardous materials will be further mitigated by implementing a hazards communication (HAZCOM) program. This program involves thorough training of employees on proper identification, handling, and emergency response to spills or accidental releases.

Emergency eyewashes and showers will be provided at appropriate locations. Appropriate Personal Protective Equipment (PPE) will be provided during both construction and operation of the facility.

3.10.1.1.2.1 Aqueous Ammonia System

Midway will minimize the potential for an occurrence of an accidental release of aqueous ammonia at the facility. Ammonia system design features will include containment berms, drainage of the unloading area into the containment area below the storage tank, emergency shutdown procedures, ammonia sensors, alarms, training, emergency response plans, and other appropriate safety procedures that will ensure safe operation of the aqueous ammonia system. Midway's Operations Manager will have overall responsibility for administering the Risk Management Plan (RMP), which will be requested under the California Accidental Release Prevention Program (CalARP). The important safety features implemented by CalPeak Power are discussed in this RMP document. These key features of the ammonia system at the Facility will include:

- Proactive facility inspection and maintenance program that will be administered by the Midway Operations Manager, and is designed to identify potential hazards before a release occurs.
- A below-grade containment area sized to contain the entire contents of one of the storage tanks (12,000 gallons) plus 10% overage, plus the maximum rainfall in 24 hours for the entire period of record.

- An unloading area that is sloped to the containment area so that any spills occurring during unloading operations will be fully contained.
- System design incorporating the latest building codes designed for Seismic Zone 4.
- Automatically actuated safety valves throughout the system.
- Pressure relief valves that vent back to the storage tank.
- An emergency shut-off valve located on the aqueous ammonia truck that can be activated by the delivery truck operator.
- Comprehensive training of employees, Facility operators, and contractors.
- Written standard operating procedures.

The facility will be operated in a manner that will protect all employees, contractors, and the public from exposure to hazardous chemicals. The facility will be designed to assure safety and minimize the potential for ammonia releases. The system will have several features (control systems, pressure gauges, flow control indicators, level indicators, alarms, etc.) that will assure that the system will operate safely. In addition, Midway will install ammonia sensors that will provide operators with an indication of a release at the site. Any release that triggers the high alarm on the sensors will trigger emergency response procedures. Midway will implement policies and procedures that will assure proper operation and safety of the aqueous ammonia system.

3.10.1.1.2.2 System Safety Features

Midway has included both passive and active mitigation features in the aqueous ammonia system design. Passive controls such as connected fill and vent lines will be in place to minimize potential vent leakage paths and ammonia releases without the assistance of automatic shutdown, or human intervention. Passive controls at the site will include a below-grade containment area surrounding the 12,000-gallon aqueous ammonia tank that will be capable of containing 110% capacity of the tank plus rainfall. In addition, the truck unloading pad will be sloped toward the below-grade containment area so that any spills of aqueous ammonia that occur during unloading operations will be directed to the containment area. A berm will also be installed around the vaporizer skid to contain any aqueous ammonia releases that occur in that area.

Several active mitigation elements are incorporated into the aqueous ammonia system design. The Facility will be operated and controlled remotely at a site located in San Diego. The Midway Operations Manager will be responsible for administering the RMP. Operators will be present at the remote control room at all times, and will continually monitor the aqueous ammonia system. The site itself will be equipped with ammonia sensors and the control system will be designed such that the aqueous ammonia system will automatically shut down in the event of a detection of aqueous ammonia above the sensors' set points. A Midway operator will be present at the site during aqueous ammonia unloading for added safety.

3.10.1.1.2.3 Process Safety Equipment

The aqueous ammonia system is designed so that each part of the system can be isolated in the event of an accident or other event. System valves are generally designed to fail closed so that the systems are isolated. This will minimize the amount of a release in the event of an accident at the facility involving the aqueous ammonia system.

The process equipment associated with the aqueous ammonia system is part of the facility's SCR emissions control system for NOx. NOx emissions are monitored at the control room to ensure proper system operation. High NOx emissions will trigger an alarm resulting in a personnel investigation to determine the cause. The remote operations center will also monitor the aqueous ammonia level in the tank. As described above, the Facility will be equipped with ammonia sensors that will alarm in the event of an ammonia release. The ammonia sensors will trigger an automatic shutdown of the ammonia system, isolating the various components of the aqueous ammonia system. Operating the Facility during an ammonia release would not exacerbate the effects of the release or present any additional hazard. Depending on the amount of release or due to potential emissions increases, the Facility may ultimately have to be shut down, but this would remain at the discretion of the operator.

Table 3.11-1 presents a summary of the devices that will be monitored by the operator and would indicate occurrence of a leak.

TABLE 3.11-1
SUMMARY OF MONITORED DEVICES

Device	Manufacturer	Detection Capabilities	Event(s) Triggering an Alarm
Ammonia Tank Level Indicator	Rochester float indicator Model A6342-12-144 with R6315-23 level transmitter	Output: 4-20 mA Conformity: ± 1.5%	Operator monitors ammonia tank level visually. Should the operator observe a rapid drop in level, or should the high level alarm be triggered, the operator will evaluate the event and shut down the ammonia system as necessary.
Ammonia Sensors (2)	Scott Bacharach, Model 4600 GasPlus	0 to 50, 150, 250, 500 ppm, with 1 to 100 ppm as an optional range value Sensor repeatability: ± 2% full scale Sensor linearity: ± 2% full scale Sensor life: 22-24 months average	Detection of a concentration of 50 ppm NH3

3.10.1.1.3 Security

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.10.1.1.4 Public Health and Safety

The programs implemented to protect worker health and safety will also benefit public health and safety. Facility design will include controls and monitoring systems to minimize the potential for upset conditions that could result in public exposure to acutely hazardous materials. Potential public health impacts associated with operation of the project will be mitigated by development and implementation of an Emergency Response Plan (ERP), a HAZCOM Program, a Spill Prevention, Control, and Countermeasures (SPCC) Plan, safety programs, and employee training.

Midway will coordinate with local emergency responders, provide them with copies of the plant site ERP, conduct plant site tours to point out the location of hazardous materials and safety equipment, and encourage these providers to participate in annual emergency response drills.

3.10.1.2 Emergency Systems

3.10.1.2.1 Fire Protection Systems

Midway will have onsite fire protection systems and will be supported by local fire protection services. Section 3.4.11 includes a detailed description of the fire protection systems.

Portable and fixed fire suppression equipment and systems will be included in the project. Portable fire extinguishers will be located at strategic locations throughout the project site. The fixed fire protection system will also include a carbon dioxide fire suppression system.

Employees will be given fire safety training including instruction in fire prevention, the use of portable fire extinguishers and hose stations, and reporting fires to the local fire department. Employees will only suppress fires in their incipient stage. Fire drills will be conducted at least twice each year for each work area.

The Fresno County Fire Protection Division (FCFPD) Station #96, located at 101 McCabe, Mendota, with an estimated response time of 15-20 minutes, will provide primary fire protection, fire fighting, and emergency response services to the Midway site. The County Fire Marshall will perform a final fire safety inspection upon completion of construction and, thereafter, will conduct periodic fire safety inspections. Prior to startup the FCFPD will be requested to visit the project site to become familiar with the site and with project emergency response procedures.

3.10.1.2.2 Medical Services and Emergency Response

Midway will have an Emergency Response Plan (ERP). The ERP will address potential emergencies, including chemical releases, fires, and injuries, and will describe emergency response equipment and its location, evacuation routes, procedures for reporting to local emergency response agencies, responsibilities for emergency response, and other actions to be taken in the event of an emergency.

Employee response to an emergency will be limited to an immediate response to minimize the risk of escalation of the accident or injury. Employees will be trained to respond to fires, spills, earthquakes, and injuries. A first-aid facility with adequate first-aid supplies and personnel qualified in first-aid treatment will be onsite.

3.10.2 Aviation Safety – Power Generation Stacks

The FAA Regulations Part 77 establishes standards for determining obstructions in navigation space and sets forth requirements for notification of proposed construction. These regulations require notification of any construction over 200 feet in height above ground level. The closest airfield with regularly scheduled commercial flights is Fresno, approximately 50 miles away. A small general aviation airport in Firebaugh (Firebaugh Airport) is also located approximately 24 miles from the site.

The stacks will be 50 feet above ground. A Notice of Construction or Alteration will not be required to be filed with the FAA. Local air uses, such as crop dusting operations, will be reviewed to determine the need for other aviation safety markings.

3.10.3 Transmission Line Safety and Nuisance

3.10.3.1 Transmission Line Description

The onsite interconnection facilities will consist of 115kV outdoor switchyard, line surge arresters, high voltage disconnect switches, high voltage circuit breakers, metering and relaying devices, foundations, ground grid, fencing, and all other components necessary to connect the output of the generators to the existing CalPeak Panoche tie-line. The transmission line will be approximately 300 feet long.

3.10.4 Facility Availability

This facility consists of four simple cycle gas turbines (two per SwiftPac Unit) and two generators that are specifically designed for peaking services. To support dispatch service, each turbine generator is commonly operated at 100 percent of base load, hence the facility will be operated to support dispatch service control in response to system demands for electricity.

The facility will be designed for an operating life of 30 years. Reliability and availability projections are based on this operating life. Operations and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of the plant components.

The percent of time that the power plant is projected to be operated is defined as the "service factor." The service factor considers the amount of time that a unit is operating and generating power, whether at full or partial load. Midway will be licensed to operate up to 4,000 hours per year, as required by PG&E. This differs from the equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable.

The EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected EAF for Midway is estimated to be approximately 95 to 99 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the "availability of a unit," which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

3.10.5 Equipment Reliability and Redundancy

Control systems and auxiliary equipment serving the power generating and transmission equipment will be selected for high reliability, where possible. Redundant equipment and systems will be installed to allow the plant to continue operating in the case of an auxiliary equipment failure where cost effective or necessary for safety. Section 3.4.2 and Table 3.4-1 of this application list the plant's main generating components and major auxiliary equipment.

Reliability will be further ensured through a regular inspection and maintenance program. Outages will normally occur during times when regional electric demand is low and surplus generating capacity is readily available.

To further enhance reliability, the project will participate in the manufactures leased engine program. The gas turbine engines are readily interchangeable, within 72 hours a new engine can be installed to replace one that has failed. An outage caused by an engine failure will be remedied within 72 hours through the use of a lease engine.

Gas turbine inspections and overhauls will dictate the length and frequency of major scheduled outages. Under expected operating conditions, the gas turbine combustors and hot sections will require a scheduled outage during the off-peak period. Depending on the length of the outage a lease engine may be installed while the Midway engine is under repair. . As dictated by operating hours, major gas turbine overhauls will require scheduled outages. Major hot section overhauls will be required at about 25,000 equivalent fired hours and major overhauls of the complete turbine and compressor will be required at about 50,000 hours.

3.10.5.1 Personnel and Administration

Along with the plant hardware, plant administrative and operational procedures will be designed to enhance reliability. Plant operations and maintenance activities will be carried out in accordance with documented procedures and by personnel trained in accordance with a documented training program. To ensure operational efficiency, selected spare parts for plant equipment and machinery will be maintained onsite. The training program will include classroom and hands-on training. Plant operations and maintenance personnel will also participate in the commissioning, startup and test activities during the plant construction period.

3.10.5.2 Combustion Turbine

The power block consists of four separate combustion turbines and two generators operating in the simple-cycle mode. Each combustion turbine generator can provide 25 percent of the total plant output and operate independent of its opposing combustion turbines.

3.10.5.3 Control and Information System

Critical functions will have redundant sensors and controls. The control systems will be designed with a redundancy level such that critical controls and indications do not fail due to a single component failure.

Control systems in general, and especially the equipment protection systems, will be designed according to stringent reliability criteria.

Plant operation will be controlled from either a locally installed operator panel or a control room off-site in San Diego, California.

3.10.5.4 RO and Demineralized Water Systems

The RO and demineralized water systems will provide high-purity water to be used for NOx control and inlet fogging. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been processed through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required demineralized water. Demineralized water will be stored in two 75,000 gallon demineralized water storage tanks

3.10.6 Power Plant Performance Efficiency

CTG output and efficiency are greatly affected by atmospheric conditions and load variations. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. Air-cooled fin-fan heat exchangers are used to maintain stack temperature at less than 750°F.

3.10.7 Fuel/Water Availability

3.10.7.1 Gas Supply

The Midway site will be fueled by natural gas supplied from PG&E's trunk line system immediately to the north of the property. The gas interconnection would be require approximately 650 feet of new line at the Midway site in order to tap into the existing PG&E system. The proposed pipeline would have sufficient capacity to supply each FT8-3 SwiftPac CTG unit with approximately 625MMBtu/hr at a pressure of 500-600 psig.

3.10.7.2 Water Availability

The water will come from the adjacent and existing CalPeak Panoche Plant well (upper groundwater aquifer). The proposed annual water use of approximately 13.6 acre-feet per year will not exceed the safe perennial yield of groundwater in the Westside Sub-basin of the San Joaquin Valley Groundwater Basins.

3.10.8 Project Quality and Control

The general contractor, the design-engineer contractor, and all significant vendors, suppliers, and subcontractors for the project will be required to develop a project-specific quality program prior to beginning work. Each program will define quality goals, processes to measure events, and incentive programs. Quality standards will include safety and environmental compliance objectives.

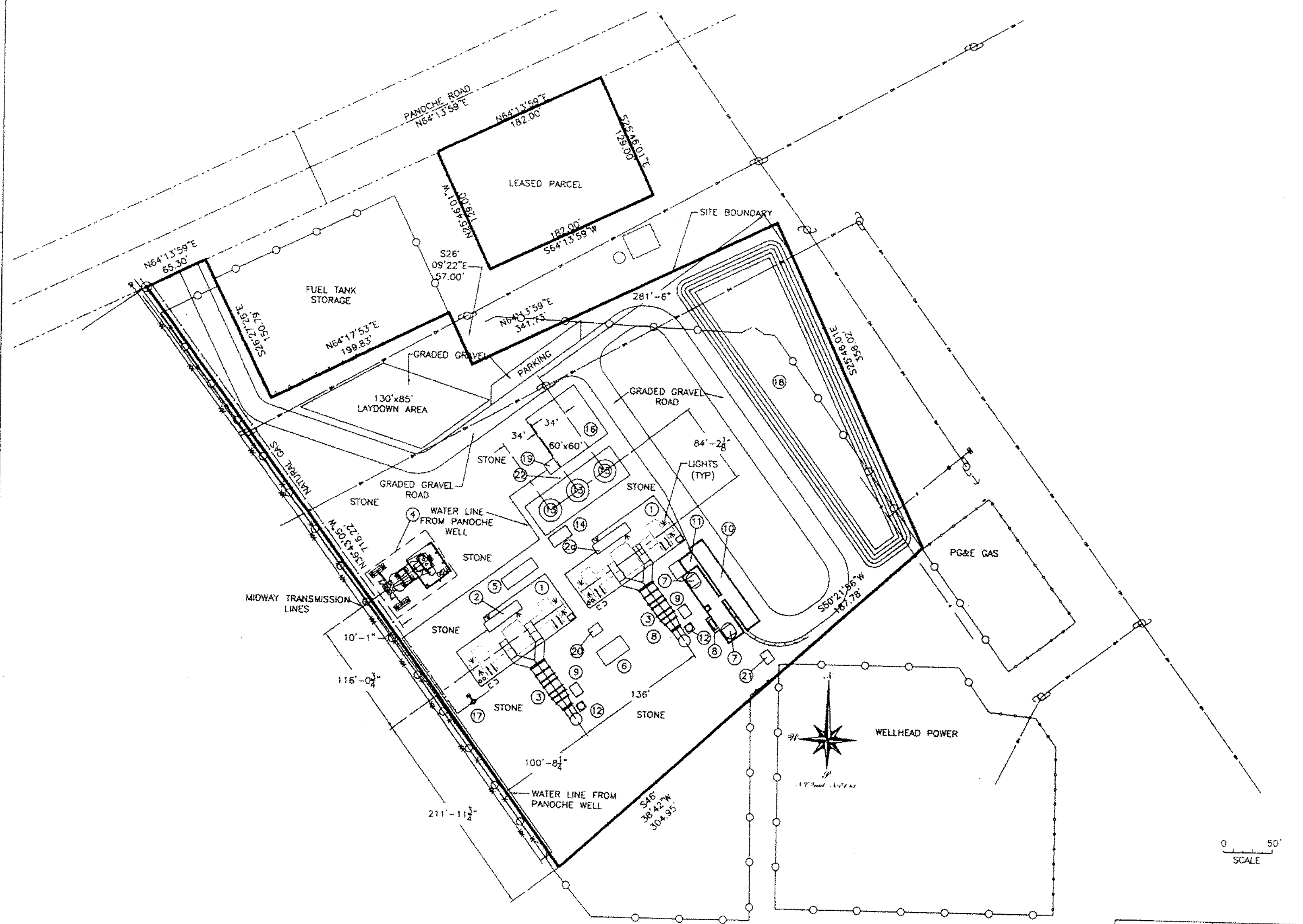
3.10.8.1 Quality Assurance

The quality assurance manual will define the quality management system and processes, management responsibility and organization, project execution, and measurement methods. Other elements of the quality assurance program will include a procedure manual, standards, job quality analysis, quality tours, preventive action planning, internal and external assessment, training, and trending.

Key quality indicators will be tracked and include surveillance, deficiencies, non-conformances, weld reject rate, audit results, quality incidents, and rework. The quality indicators will be metrically measured and reported.

3.10.8.2 Quality Control Records

Quality records will be maintained during the detailed design phase of the project, during the construction phase and during plant commissioning. Quality records include written documentation that procedures and standards are followed including inspection and testing reports, audit checklists, audit reports, and quality incident investigation reports.



REV	DATE	DESCRIPTION	BY	APP
A	22AUG06	INITIAL ISSUE	RAR	DAT

ITEM	DESCRIPTION	QTY
1	FT8-3 GAS TURBINE GENERATOR UNIT	2
2	PRIMARY CONTROL ENCLOSURE 1	1
2a	PRIMARY CONTROL ENCLOSURE 2	1
3	CO/SCR CATALYST	2
4	SWITCH YARD/ MAIN STEP-UP TRANSFORMER/ DEAD END STRUCTURE (13.8x115 kV)	1
5	SECONDARY CONTROL ENCLOSURE	1
6	AIR COMPRESSOR/DRYER SKIDS	2
7	AQUEOUS AMMONIA TANK & CONTAINMENT AREA	1
8	AQUEOUS AMMONIA FORWARDING PUMP SKID	1
9	AQUEOUS AMMONOA INJECTION CONTROL SKID	2
10	AQUEOUS AMMONIA UNLOADING AREA	1
11	WASH DOWN DRAIN TANK AREA	1
12	CEMS ENCLOSURE	2
13	DEMINERALIZED WATER TANK (75,000 GALLON)	2
14	DEMINERALIZED WATER PUMP SKID	1
15	RAW WATER TANK (75,000 GALLON)	1
16	DI TRAILER PAD	1
17	GAS FUEL SCRUBBER	1
18	RO/EVAPORATION POND	1
19	RO UNIT	1
20	WASTE WATER SYSTEM COLLECTION SUMP	1
21	WASTE WATER SYSTEM ABOVE GROUND STORAGE TANK (4,700 GALLONS)	1
22	LIGHT POLE	1

NOTES:

1. TANK DIMENSIONS= 23' DIAMETER x 24' HIGH

Starwood Power Midway LLC

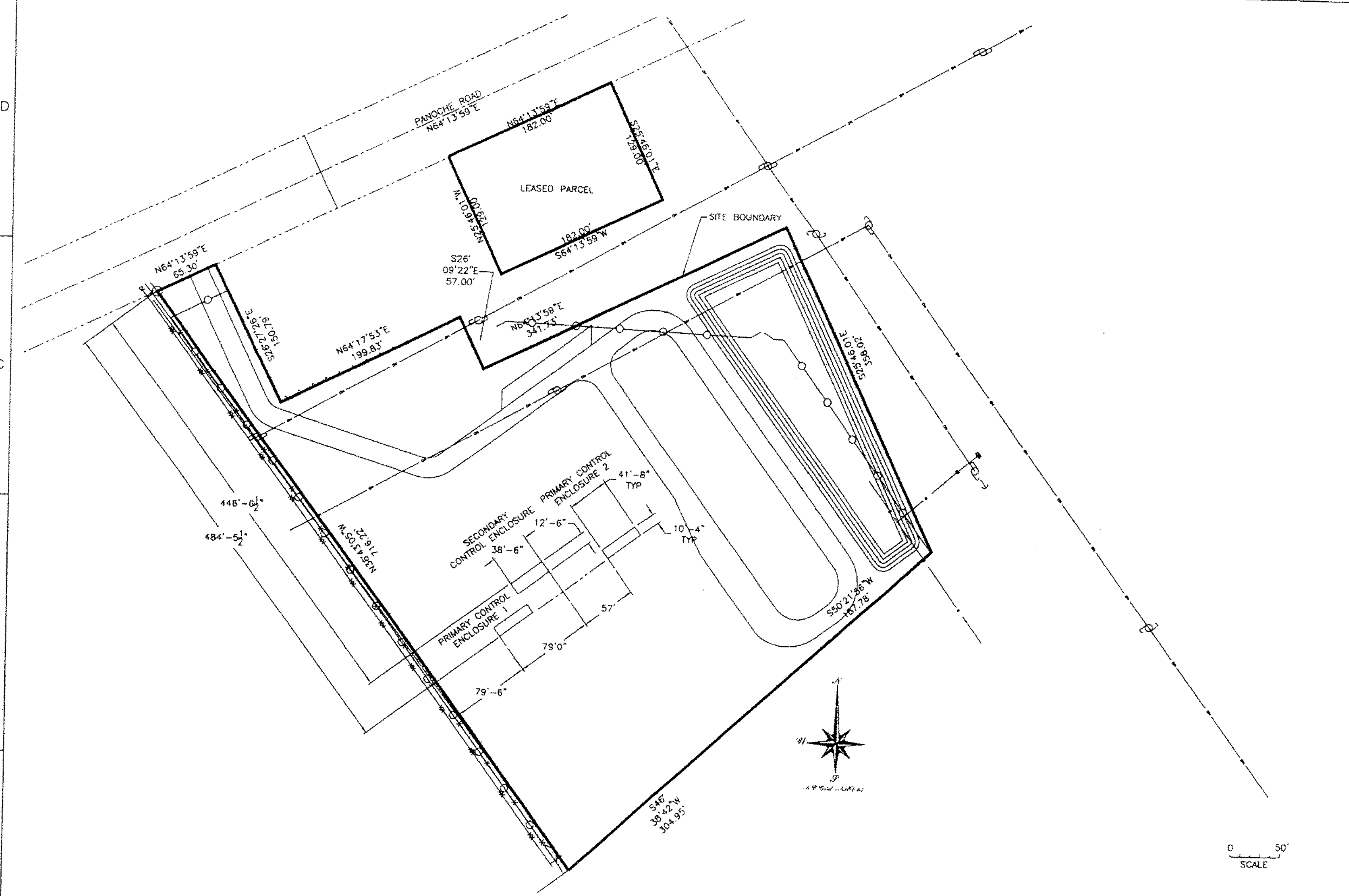
ENERGY SERVICES INC.

SCALE	1=50
DATE	22AUG06
DRN	RAR
CHK	DAT
APP	HAG

PRELIMINARY PLAN

NO SM-L-101 SH 1/5 REV A

REV	DATE	DESCRIPTION	BY	APP
A	04JAN07	INITIAL ISSUE	RAR	DAT



Starwood Power
Midway LLC

ENERGY SERVICES INC.

SCALE	1=50
DATE	04JAN07
DWN	RAR
CHK	DAT
APP	HAG

PRELIMINARY PLAN

NO SM-L-101 | SH 3 | REV A

Prepared for:

Starwood Midway L.L.C.
591 West Putnam Avenue
Greenwich, CT. 06830

Surveyed and Platted by:

TRI-CITY ENGINEERING
ENGINEERS SURVEYORS

Site Benchmark:

NGS Benchmark: PID AH2570
Designation: M362 RESET 1977
NAVD88 Elev: 396.6 feet
UTM: 10 716331.528E 4059412.053N

Note:

1 – All Distances are in Feet and Decimal Feet thereof.

Legend:

- Section Line
- Right of Way Line
- Existing Boundary Line
- Roadway Centerline
- Chainlink Fence
- Overhead Power Lines
- Utility Pole

Legend:

- Position for Section Corner – Described as noted
- NGS Benchmark – Described as noted
- Fresno County Brass Cap – Described as noted
- Pacific Gas and Electric monument – Described as noted
- 3/4" Iron Pipe – Described as noted

Easements/Exceptions:

Refer to Preliminary Title Report by First American Title Company, dated June 1, 2006 at 7:30am, order #1003-2372988, 2nd Amendment, for Easement Exception particulars.

Exception 7 — A strip easement for two pipelines, in favor of Valley Pipeline Company, recorded September 5, 1914, in Book 560, at Page 183, O.R.F.C. Width of easement not disclosed.

Exception 8 — A 15 foot wide strip easement for pipelines and incidental purposes, in favor of the Pacific Gas and Electric Company, recorded October 7, 1929, in Book 1025, at Page 366, O.R.F.C.

Exception 8a — Modifications to above easement, now 50 feet wide, recorded October 21, 1992, as Instrument No. 92-159596, O.R.F.C.

Exception 11 — A 20 foot wide strip easement for a single line of poles, in favor of Standard Oil Company of California, recorded June 12, 1949, in Book 2259, at Page 187, O.R.F.C.

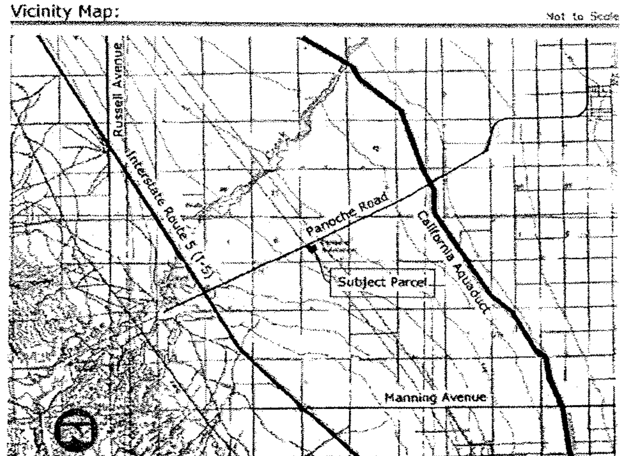
Exception 14 — A strip easement for a line of poles, in favor of the Pacific Gas and Electric Company, recorded April 12, 1949, in Book 2259, as Instrument No. 18194, O.R.F.C. Width of easement not disclosed.

Exception 19 — A one rod (16.5 feet) wide strip easement for pipelines, in favor of Union Oil Company of California, recorded August 23, 1955, in Book 3812, at Page 390, O.R.F.C.

Exception 38 — An easement for metering and regulating pipelines and other incidental purposes, in favor of the Pacific Gas and Electric Company, recorded July 7, 1992, as Instrument No. 92-094730, and rerecorded September 15, 1992, as Instrument No. 92-140215, O.R.F.C.

Vicinity Map:

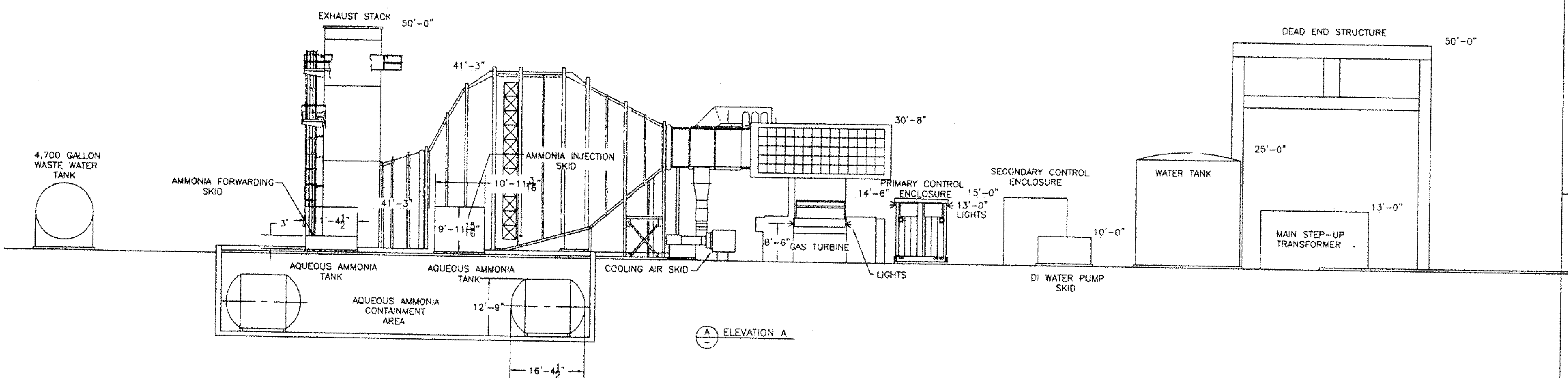
Not to Scale



Scale: 1"=120'
Aug. 24, 2006

STARWOOD POWER - MIDWAY, LLC PEAKING PROJECT	Figure 3.3-1 TOPOGRAPHIC SURVEY MAP	2006

REV	DATE	DESCRIPTION	BY	APP
A	25OCT06	INITIAL ISSUE	RAR	DAT



(A) ELEVATION A

NOTE:
1. PER PWPS DWG. 0302-100-S000D-INCLUDES 6" FOR FOR CONCRETE PAD HEIGHT ABOVE GRADE.

PRELIMINARY

0 10 20 30 40
SCALE

Starwood Power Midway LLC

ENERGY SERVICES INC.

SCALE	3/32"=1'
DATE	25OCT06
DRN	RAR
CHK	DAT
APP	HAG

PRELIMINARY ELEVATION

NO. SM-L-101 | SH 2 | REV A